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MILWAUKEE, FEBRUARY, 1885.

{Terms: \$1.00 a Year in Advance.
Single Copies, 10 Cents.

ABOUT SEVENTY-FIVE FEET

From the engine house of The Geo. T. Smith Middlings Purifier Company, at Jackson, Michigan, the Eldred Milling Company is erecting a 250-barrel flour mill. It will be equipped with Smith Purifiers, Smith Centrifugals, and

→ THE STEVENS NON-CUTTING ROLLS ←

The power will also be supplied by the Smith Co. It is intended to make this a Model Centrifugal All Roller Mill, open to the inspection of the world. Competitors for placing the rolls in this mill appeared from MILWAUKEE, INDIANAPOLIS, GRAND RAPIDS, and many other points, but the award was made solely upon the acknowledged merits of our rolls for their Capacity, Quality of Work Produced, Horizontal and Perpendicular Adjustments, Feeding Device, and general substantial appearance and worth. Success is the true test of merit.

THE JOHN T. NOYE MFG. CO., BUFFALO, N. Y., U. S. A.

SUCCESSFUL FROM THE START

Office of MOUNT HOPE MILLS AND McLEAN STEAM ELEVATOR.

McLean, Ill., Dec. 13th, 1884.

MESSRS. EDW. P. ALLIS & CO., Milwaukee, Wis.

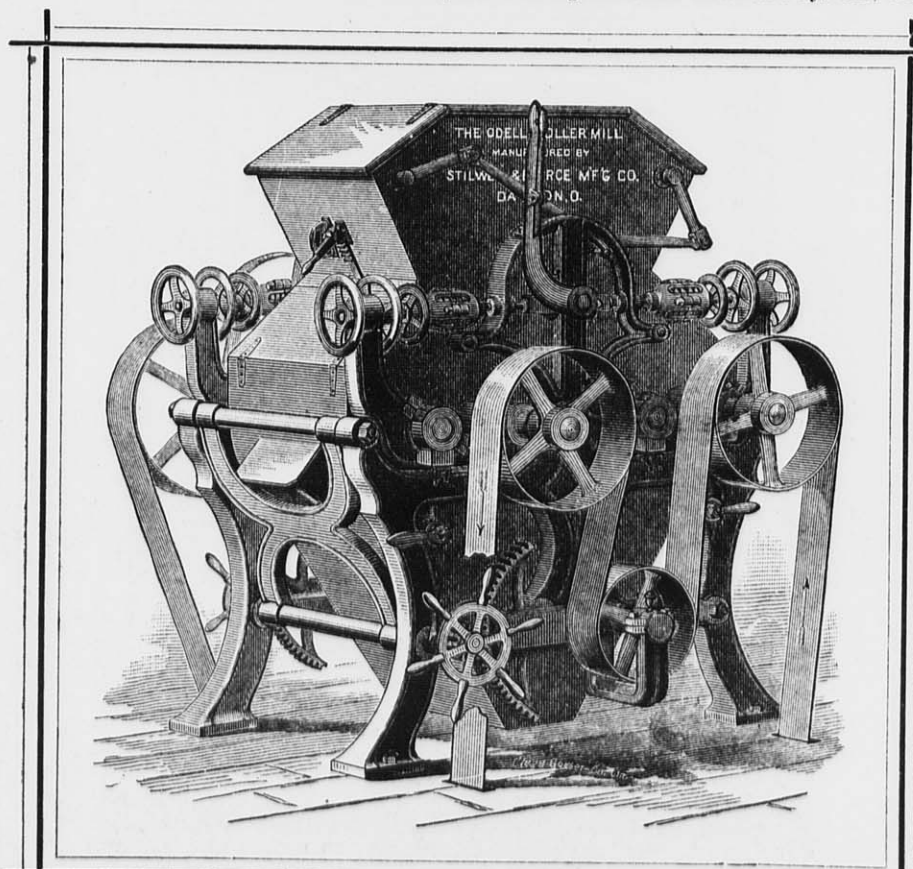
DEAR SIR:—I cheerfully accept the New Roller Mill that you have built in the place where the old buhrs and other machinery were taken out, and must say that it is fully up to my expectations in every respect, in workmanship and quality of flour produced.

Respectfully Yours,

C. C. ALDRICH.

ODELL'S ROLLER MILL SYSTEM

Is now in successful operation in a large number of mills, both large and small, on hard and soft wheat, and is meeting with Unparalleled Success. All the mills now running on this system are doing very fine and close work, and we are in receipt of the most flattering letters from millers. References and letters of introduction to parties using the Odell Rolls and System, will be furnished on application to all who desire to investigate.



ODELL'S ROLLER MILL,

Invented and Patented by U. H. ODELL, the builder of several of the largest and best Gradual Reduction Flour Mills in the country.

AN ESTABLISHED SUCCESS

WE INVITE PARTICULAR ATTENTION TO THE FOLLOWING

→ POINTS OF SUPERIORITY ←

possessed by the Odell Roller Mill over all competitors, all of which are broadly covered by patents, and cannot be used on any other machine.

1. It is driven entirely with belts, which are so arranged as to be equivalent to giving each of the four rolls a separate driving-belt from the power shaft, thus obtaining a *positive differential motion* which cannot be had with short belts.

2. It is the only Roller Mill in market which *can instantly be stopped without throwing off the driving-belt*, or that has adequate tightener devices for taking up the stretch of the driving-belts.

3. It is the only Roller Mill in which *one movement of a hand-lever spreads the rolls apart and shuts off the feed at the same time*. The reverse movement of this lever brings the rolls back again exactly into working position and *at the same time turns on the feed*.

4. It is the only Roller Mill in which the movable roll-bearings may be adjusted to and from the stationary roll-bearings *without disturbing the tension-spring*.

5. Our Corrugation is a decided advance over all others. It produces a more even granulation, *more middlings of uniform shape and size, and cleans the bran better*.

We use none but the BEST ANSONIA ROLLS.

OUR CORRUGATION DIFFERS FROM ALL OTHERS, AND PRODUCES

LESS BREAK FLOUR and MIDDINGS of BETTER QUALITY.

Mill owners adopting our Roller Mills will have the benefit of Mr. Odell's advice, and long experience in arranging mills. Can furnish machines on Short Notice. For further information, apply in person or by letter to the sole manufacturers,

STILWELL & BIERCE MANUFACTURING CO.,

Agents for Du Four's Bolting Cloth.

Please mention this paper when you write to us.

DAYTON, OHIO, U. S. A.

CONCLUSIVE PROOF

OF THE SUPERIORITY OF THE

GRAY NOISELESS ROLLER MILL

Is furnished by the fact that these celebrated machines will be used by Messrs. C. A. PILLSBURY & Co., in their new

—PILLSBURY "B" MILL—

All bidders for the work of constructing this immense mill being required to figure on using the Gray Roller Mills. The selection of these machines for the new "B" mill was the result of several years practical test in the other mills owned by the same firm in competition with various other roller mills, the decision being unanimous, that, in all particulars, for practical work in the mill, Gray's Noiseless Roller Mills were superior to all others.

We wish to assure our customers who may not wish to build 2000 barrel mills, but who wish to build mills of smaller capacity, that no matter what size mill they desire to build, or how small its capacity, the Gray Roller Mills are the best they can use, and we shall at all times furnish machines equal in every respect of material and workmanship to those which will be used in the new Pillsbury Mill.

EDW. P. ALLIS & CO.,

RELIANCE WORKS,

MILWAUKEE, WIS.

Sole Manufacturers of Gray's Patent Noiseless Roller Mills, adapted to mills of any desired capacity.

The United States MILLER

Published by
F. HARRISON CAWKER. {VOL. 18, NO. 4}

MILWAUKEE, FEBRUARY, 1885.

Terms: \$1.00 a Year in Advance
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MILLERS' NATIONAL ASSOCIATION.

Secretary Seamans issued the following call to members of the Executive Committee of the Millers' National Association, Jan. 5, 1885.

SECRETARY'S OFFICE,
Milwaukee, Wis., Jan. 5, 1885.

Dear Sir:—There will be a meeting of the entire Executive Committee, Millers' National Association, at the Grand Pacific Hotel, Chicago, Jan. 19th and 20th, 1885.

This meeting is called for the purpose of entertaining and discussing any and all matters of value and interest, and attend to any business that may be deemed important and for the good of the Association or its members. Among other matters requiring attention may be mentioned:

INSURANCE (fire) and the desirability of an increase in the facilities of Mutual Companies.

REBATES on jute bags exported with flour.

TRANSPORTATION—Domestic and Foreign.

BRAN COMPRESSORS—To decide upon the merits of such as may be presented or ready for trial.

It is not expected this meeting will be confined exclusively to the regular Executive Committee, but each State is requested to send one or more live representatives.

Respectfully,
S. H. SEAMANS, Sec'y.

In response to the above call, the following gentlemen, representing seven States, met at the Grand Pacific Hotel, Chicago, Monday A. M., Jan'y 19th, 1885:

J. A. Christian, Pres., Minneapolis, Minn.
S. H. Seamans, Sec'y, Milwaukee, Wis.
C. H. Seybt, Chm'n Ex. Com., Highland, Ill.
J. A. Hinds, " " Rochester, N.Y.
Homer Baldwin, " " Youngstown, O.
Rob't Colton, Sec. O. M. Ass'n, Belfontaine, O.
N. Elles, " Ind. " Evansville, Ind.
H. C. Cole, Chester, Ill.
H. L. Halliday, Cairo, "
D. R. Sparks, Alton, "

Other States would have been represented but for blockade of railroads by snow.

Meeting called to order by the President, J. A. Christian, of Minneapolis.

On motion of C. H. Seybt, the subject of Mill Insurance, was taken under consideration. In discussing this matter, Mr. Seybt stated, that the rate of insurance on flour mills, as adopted by the stock companies within the board, was extortionate, and by way of illustration gave his recent experience. A stock company in St. Louis, that had been carrying a \$5,000 policy on his mill for 16 years, notified him at the date of its expiration, a few days since, that they would only take \$2,000, and the rate would be increased to 5.60, while the actual cost the past year, in the Millers National Insurance Company—which takes nothing but mill risks—was less than 3 per cent., and the average for the past eight years, or during the life of the company, was only 52-100 of the old rates established by the board companies, showing conclusively to his mind, that mutual companies properly conducted, which make a specialty of mill insurance, can, and do insure cheaper than stock companies.

Mr. Sparks, of Alton, favored those present with his experience in mutual companies, particularly in the Millers' National and the Illinois Millers' Mutual, (the latter of which he is president), and urged strongly the expediency of an increase in the maximum by the Millers' National, on one risk to \$15,000, which, he contended, was no greater proportion for the company to assume in its present prosperous financial condition, than when the company first increased its maximum to \$10,000.

After a general discussion by Messrs. Halliday, Cole, Baldwin and others, it was

Resolved, That the matter of insurance be postponed until the afternoon session, when Mr. Barnum, Secretary of the M. N. Ins. Co., could be present; he being a practical insurance man, might give the committee much information that would prove valuable in discussing the subject under consideration; which was agreed to.

REBATE ON JUTE BAGS EXPORTED.

Information having been received by the Committee, since the call issued for this meeting, that the difficulties which had of late obstructed the collections of rebates had been removed, and the further information that the Treasury Department had commenced the payment of delayed claims, therefore any action on the part of the committee was deemed unnecessary. Adjourned.

AFTERNOON SESSION.

Mr. Christian in the Chair.

The Secretary stated that inasmuch as inquiries had been made regarding the proper

party entitled to the custom house B. of L. for flour sold in jute bags for export to domestic buyers, believed that an expression by the committee would be accepted generally as a basis of future transactions.

After a full and general discussion, Mr. Seybt offered the following:

Resolved, That millers selling flour for export in jute bags shall be entitled to the bill of lading for the purpose of collecting the drawback on said bags.

Resolved, That the Secretary of this Association be and is hereby instructed to publish this resolution in the milling papers.

Mr. W. L. Barnum, Secretary of the Miller's National Insurance Company, being present, the subject of mutual mill insurance was taken up for consideration; but owing to the lateness of the hour, and the limited time at Mr. Barnum's disposal, it was suggested, and the suggestion adopted, that the subject be made the special business of the committee, to be taken up at 10 o'clock A. M., to-morrow, at the office of the Insurance Company on La Salle street. Adjourned to 7 o'clock.

EVENING SESSION, NEW YORK.

Mr. J. A. Hinds, Secretary of the New York State Millers' Association, presented a bill for \$500, made by Judge H. R. Selden of Rochester, based upon an agreement claimed to have been made with the Defence Association of New York Millers in 1876, concerning a contingent fee, to be paid to him in case the Denchfield suits were finally decided in favor of the defendants.

The committee refused to allow said claim for the following reasons:

1st. While the committee has not the original before them, the wording of the receipt attached to the account rendered, indicated that the contingent fee was based upon a successful and final termination of the litigation under the auspices of Judge Selden, and the defendants to these suits. Judge Selden, however, was defeated in all the suits in the courts below, and success was not secured until taken into the higher courts by the National Millers' Association (its attorneys, together with a liberal expenditure of time and money), and it is the opinion of this committee that Judge Selden cannot consistently claim a contingent fee under the circumstances.

2d. The agreement with Judge Selden was entered into by the defendants (millers of Rochester, New York), many years prior to the time of the National Association assuming charge of the defence in the Denchfield suits, and the agreement never having been made known to, or authorized by the Association, they must refuse to entertain the claim.

Signed,

C. SEYBT, Ills., Chairman.
J. A. CHRISTIAN, Minn.
S. H. SEAMANS, Wis.

BRAN COMPRESSORS.

The Secretary stated that no machine had yet been presented, in actual working order, that fully met the requirements laid down by the committee governing the award. There were, however, several machines under way, and nearing completion, three of which were being built by large machine works that usually made a success of the machinery they built. He felt satisfied they would either solve the problem or prove the requirements impracticable. In addition to the parties named above, there were others, inventors, working individually, that had great hopes of being successful, while there were others, perhaps one hundred, that had fallen out of the ranks and given up trying to secure the offer.

Under these circumstances, it would be for the committee to say whether further time should be granted.

Mr. Seybt offered the following:

Resolved, That the award of the premium of \$1000 for the invention of a Bran Compressor coming up to the requirements as stipulated by the Association be hereby deferred until December 1st, 1885.

Mr. Seamans stated that this would necessitate delaying the award till the date named in the resolution, whereas the parties likely to be successful would be ready with their inventions long before this date. He would therefore offer an amendment fixing the date of expiration July 1st, 1885, which was approved, and the resolution as amended was adopted.

Adjourned "to 9 A. M. to-morrow," January 20th.

MORNING SESSION.

J. A. Christian presiding.

LONDON EXPOSITION, 1886.

Mr. Seybt desired to call attention of the committee to the fact that Great Britain would hold an exposition in London in the spring of 1886, open to the world. Each country making a complete exhibit of its

own; for instance, America would be invited to have an exposition of its own in the city of London, at the same time that other nations and countries held similar exhibits; and he suggested the propriety of the milling industry, (it being one of the largest) and its production having the most extensive sale in Great Britain of any in this country, being well and fully represented and in order that a favorable exhibit might be secured, he believed the Association, as an organization, should encourage, and through its officers and members use every endeavor to secure such a representation of milling products as would show to foreign consumers, and the world at large, the diversity and extent of our milling facilities. After a thorough discussion of the matter the following resolution was offered by Mr. Elles of Indiana:

Resolved, That a committee of seven be appointed whose duty it shall be to take cognizance of the exposition of American products, to be held in London, May 1886, and further, that Mr. C. H. Seybt, who is soon to visit London, is hereby instructed to investigate and report to the Secretary what action is necessary, in order that the American milling industry may be properly represented.

Resolution adopted.

The committee then adjourned to the office of the Millers' National Insurance Co., on La Salle st., to confer with the officers of the company regarding the increase of the maximum rate of insurance on mills from \$10,000 to \$15,000.

2 P. M., AFTERNOON SESSION.

Meeting called to order by President Christian. The conference with the officers of the Insurance Company resulted in the following being offered by Mr. Cole, of Chester, Ill.

Resolved, By the Executive Committee of the Millers' National Association, in session at Chicago, Ills., Jan. 19th and 20th, 1885, that the managers of the Millers' National Insurance Company, be requested to increase the maximum of insurance on any one risk to fifteen (15) thousand dollars, providing at least fifty (50) applications for such additional insurance are on file and are up to the requirements of said company.

Resolved, That the Secretary is hereby instructed to send a copy of the above resolution to the manager of the Millers' National Insurance Company.

Adopted.

EXPORT COMMITTEE.

Mr. Seybt called the attention of the committee to the unprotected and irregular manner in which our export trade was done, it being subject to no rules or regulations of our own, while the transportation company and the European buyer formulated such rules and regulations as best protected their interests, which were not always to the best interest of the seller or exporter, and it was his belief that this association should take some action looking to the protection of those engaged in the trade, which now covered a majority of the mills in the association.

After a very general discussion, and exchange of experiences, regarding delays in transit—Arbitrations—Rules of the London Flour Trade Association—Liability of seller and buyer, etc., etc., the following was adopted:

Resolved, That a standing committee of five be appointed, to be known as the Export Committee, whose duty it shall be to facilitate the export trade in flour by taking action calculated to remove as far as practicable all present obstacles and hardships connected therewith, having their origin either with the consignor, consignee, with the transportation or insurance companies, to bring about and establish a better understanding by and between all parties as to their respective rights, duties and liabilities both at home and abroad, to establish such rules and regulations as they deem advisable for the promotion of the trade. The said committee to receive and give careful consideration to all complaints submitted in writing from members of the association, and, if necessary, to employ competent legal counsel, and without further instruction or authorization, bring any case so presented and investigated before the proper tribunal for adjudication, at the expense of this association, providing no cases shall be contested by the association unless they embody principles of general interest and importance to the export trade.

The committee called for in the foregoing resolution, was nominated and appointed by the Chair, to wit:

C. H. SEYBT, Highland, Chm'n.
S. H. SEAMANS, Milwaukee, Sec'y.
Z. T. COLE, Chicago.
J. A. CHRISTIAN, Minneapolis.
M. MATHEWS (of S. & M.) Buffalo.

There being no further business before the committee adjourned, sine die.

S. H. SEAMANS, Sec'y.

MORE than three hundred years ago an English historian gave the following description of a saw-mill: "The saw-mill is driven with an upright wheel, and the water that maketh it go is gathered whole into a narrow trough, which delivereth the same water to the wheels. This wheel hath a piece of timber put to the axle-tree end, like the handle of a broom, and fastened to the end of the saw, which being turned by the force of the water, hoisteth up and down the saw, that it continually eateth in, and the handle of the saw is kept in a rigall of wood from swerving. Also the timber lieth as it were upon a ladder, which is brought by little to the saw with another vice."

LUSTROUS POLISH FOR CABINET WORK.

A fine, lustrous polish for delicate cabinet work can be made as follows: Half pint linseed oil, half pint of old ale, the white of an egg, one ounce spirits of wine, one ounce spirits of salts. Shake well before using. A little to be applied to the face of a soft linen pad, and lightly rubbed for a minute or two over the article to be restored, which should be first rubbed off with an old silk handkerchief. It will keep any length of time if well corked.

A LAWYER'S ADVICE.—It is related that a banker's clerk, during the past summer, stole from his employers in the city of New York, \$100,000 which he lost betting at faro. He called upon a lawyer for advice, making a full confession of his crime. Between the consummate pair of scoundrels the following dialogue then ensued. Quoth the lawyer:

"How much does your defalcation amount to?"

"One hundred thousand dollars."

"Got any of it left?"

"Not a cent."

"That's bad; you have left nothing to work with."

"What must be done?"

"You must return to your desk and abstract another hundred thousand dollars."

"What must I do that for?"

"To preserve your character and save you from going to the state prison. With the hundred thousand dollars you are to steal to-morrow I intend to compromise with the bank. Your stealings after to-morrow will amount to \$200,000. I will call at the bank and confess your offence. I will represent myself as your heart-broken uncle, honest but poor; I will offer the bank \$50,000 to hush up the matter; the bank will accept. This will leave \$50,000 to divide between you and me—that is \$25,000 apiece. With that you can retire from business."

The young man listened and learned rascality. He doubled his defalcation, and compromised as the lawyer said he should. He is now thought to be worth \$25,000 and is counted "one of the most respectable gentlemen in the city of New York," though he knows that he is a worthless thief.

AND now we are told that the project is on foot again to transform, by the aid of Uncle Sam's pocket book, our Erie canal into a ship canal capable of passing vessels from tide water to the upper lakes. We really thought that the project had been dismissed long ago, but it appears to be resurrected, for a bill to that effect is introduced into the House of Representatives, asking for the modest little sum of \$8,000,000 to aid in the work. As the National Treasury is filled to overflowing, and the income exceeds the expenses, some avenue of escape for the surplus has to be provided, but of all the schemes invented for that purpose, the transformation of the Erie canal into a ship-canal, appears to us to be the wildest, especially when we read that by the way of special inducements, this bill provides for the free passage through the projected canal of all American "war ships." Well, it is perfectly safe to predict that this bill will be doomed to oblivion, and that the great statesman whose giant intellect originated the scheme will not see his name handed down to posterity as the great benefactor of the commerce of New York State and the father of the Erie ship-canal.—*Milling World*.

UNITED STATES MILLER.

PUBLISHED MONTHLY.

OFFICE NO. 124 GRAND AVENUE, MILWAUKEE.
Subscription Price \$1 per year in advance.
Foreign Subscription \$1.50 per year in advance.

MILWAUKEE, FEBRUARY, 1885.

ANNOUNCEMENT:

WM. DUNHAM, Editor of "The Miller," 69 Mark Lane, and HENRY F. GILLIG & Co., 449 Strand, London, England, are authorized to receive subscriptions for the UNITED STATES MILLER.

We send out monthly a large number of sample copies of the UNITED STATES MILLER to millers who are not subscribers. We wish them to consider the receipt of a sample copy as a cordial invitation to them to become regular subscribers. Send us One Dollar in money or stamps, and we will send THE UNITED STATES MILLER to you for one year.

The United States Consuls in various parts of the world who receive this paper, will please oblige the publishers and manufacturers advertising therein, by placing it in their offices, where it can be seen by those parties seeking such information as it may contain. We shall be highly gratified to receive communications for publication from Consuls or Consular Agents everywhere, and we believe that such letters will be read with interest, and will be highly appreciated.

TO ADVERTISERS.

Milwaukee Wis., February 1, 1885.

To Those Interested in the Flouring Trade:

THE UNITED STATES MILLER is now in its ninth year, and is a thoroughly established and much valued trade paper. It has a large regular list of domestic and foreign subscribers. It is sent monthly to United States Consuls in foreign countries, to be filed in their offices for inspection by visitors. It is on file with the Secretaries of American and European Boards of Trade for inspection of members. Aside from the above, thousands of sample copies are sent out every month to flour mill owners who are not subscribers, for the purpose of inducing them to become regular subscribers, and for the benefit of those advertising in our columns. Every copy is mailed in a separate wrapper. Our editions have not been at any time since January, 1882, less than 5,000 copies each, and are frequently in excess of that (see affidavit below). We honestly believe that the advertising columns of the UNITED STATES MILLER will bring you greater returns in proportion to the amount of money invested than any other milling paper published. Advertisers that have tried our paper for even a few months have invariably expressed themselves well satisfied with the results. Our advertising rates are reasonable. Send for estimates, stating space needed. The subscription price of the paper with premium is One Dollar per year. Sample copy sent free when requested. We respectfully invite you to favor us with your patronage. We shall be pleased to receive copies of your catalogues, and also trades items for publication free of charge. Trusting that we may soon be favored with your orders, we are,

Yours truly,

UNITED STATES MILLER.

E. HARRISON CAWKER, Publisher.

"MILL FOR SALE" ads. inserted once for \$2.00, or three times for \$5.00, cash with order.
"SITUATION WANTED" ads. 50 cents each insertion, cash with order.

STATE OF WISCONSIN, ss.

MILWAUKEE COUNTY.
E. HARRISON CAWKER, editor and publisher of the United States Miller, a paper published in the interest of the flouring industry, at No. 124 Grand Avenue, in the City of Milwaukee, and State of Wisconsin, being duly sworn, deposes and says that the circulation of said paper has at no time since January, 1882, been less than FIVE THOUSAND (5,000) copies per month; further, that it is his intention that it shall not in the future be less than FIVE THOUSAND copies each and every month; further, that he has paid for regular newspaper postage at the rate of two (2) cents per pound on domestic and Canadian newspaper mail for the years 1883 and 1884 the sum of \$123.74, showing an average of \$17.65 per month for 24 months; the average weight of domestic and Canadian mail being 882½ pounds per month and the total number of pounds of such newspaper mail sent out during the 24 months ending with December, 1884, being 21,180 pounds. Six copies of the U. S. Miller weigh about one pound. The above postage does not include postage paid on local or foreign papers, Canada excepted.

E. HARRISON CAWKER.

Subscribed and sworn to before me this 7th day of January, A. D. 1885.

G. MCWHORTER.

Justice of the Peace, Milwaukee, Co., Wis.

MILWAUKEE AMUSEMENTS.

GRAND OPERA HOUSE.—Performances every evening, and Wednesday, Saturday and Sunday matinees.

ACADEMY OF MUSIC.—Performances every evening, Wednesday, Saturday and Sunday matinees.

SLANSBY'S VARIETY THEATRE.—Performances every evening, and Thursday and Sunday matinees.

DIME MUSEUM.—Performances every hour from 1 P. M. to 10 P. M., every day. Freaks, curiosities and excellent stage performances.

The annual report of the *Millers' National Insurance Company* of No. 143 LaSalle St., Chicago, Ill., is at hand, and shows the Company to have a surplus over all liabilities of \$833,907.00. Since its organization the company has paid losses amounting in all to \$416,502.48.

DURING the month of January the Wisconsin Central Railroad completed their track to St. Paul and Minneapolis, and has thrown the through line open for business. The Wisconsin Central is one of the finest equipped and most important lines in the Northwest, and from the beginning the Company has

shown great enterprise. It has surmounted innumerable difficulties in the past, but now its future seems bright. This road is of great importance to Milwaukee. It will do an immense passenger traffic, as well as freight. Everybody going to St. Paul and return now figures on going one way on the Wisconsin Central.

We call the attention of steam users to the card of Messrs. Mayer & Ackerman, of Milwaukee, published in this issue. Their pipe-covering was recently submitted to a trying test by the Western Manufacturers Mutual Insurance Co., of Chicago, and is considered one of the very best coverings made.

THOSE of our readers desiring a first-class machine for grinding feed, wet or dry, will do well to read the advertisement of Bolte's Four-high Roller Mill, on page 61 of this paper. The machine has been thoroughly tested, meeting all the requirements satisfactorily. This mill is also well adapted to the use of maltsters, distillers, spice mills, etc.

NEARLY all the State Legislatures now in session have bills under consideration concerning the grain trade.

THE Minneapolis Head Millers Association have awarded the contract for erecting a monument in memory of the victims of the great milling explosion, to Messrs. Sullivan & Farnham, of Minneapolis. The monument will be 35 feet high, and will cost \$3,500.

THE New York Produce Exchange is organizing a clearing house for the grain trade in New York, for the clearance of contracts between members of the Exchange. The proposed plans provide for a clearing department, with a manager and clerks sworn to secrecy, under the control of a committee of three. The plan provides for daily settlements.

THE *Mail and Express* says: The report of the American Consul at Calcutta ought to be reassuring to wheat-growers in this country. The wheat crop in India for 1884 is 245,000,000 bushels, raised on 26,000,000 acres of land, or 9 2-5 bushels to the acre. The United States average last year was 13 bushels. The Delhi price is 80 cents per bushel; cost of transportation from Delhi to Calcutta 19 cents; cost from Chicago to New York about 15 cents, and New York is twice as near European markets as Calcutta. If wheat can be raised and sold in Chicago at 80 cents per bushel, there can be no competition by East India growers.

MILL DAM LAWS UPHELD.—Nearly all the states in the Union have statutes authorizing any person to maintain a mill dam on a non-navigable stream on his own land by paying to the owners of overflowed land such damages as may be assessed. In a case carried to the United States Supreme Court from New Hampshire it was claimed that the effect of such a law was to deprive the owners of overflowed land of their property without due process of law, and hence that the statute was in violation of the fourteenth amendment to the federal constitution. In an opinion rendered by Justice Gray, January 17th, the Court sustains the validity of the New Hampshire act. This may be regarded as a test case and the decision as upholding the "mill dam laws" in the other states.

WHEAT in the olden time, we read, sold for twenty shillings per quarter, equal to £6 now; in the years 1193, 1194, and 1195, for twelve pence a quarter; beans and oats for four pence, in 1216. Wheat sold in some places for twelve pence a quarter, and not many years after for twenty shillings a bushel, as much as four pounds now, 1286; wheat sold for forty shillings a quarter, as much as eight pounds now, 1315; wheat sold for three pounds a bushel, 1316; wheat sold for forty shillings a quarter, as much as twenty shillings a bushel now, 1335; wheat sold in London for four shillings a quarter, 1493.

In the reign of		£	s.	d.
Philip and Mary	it sold for..... per qr.	0	6	8
Elizabeth	"	0	9	0
James I.	"	0	11	6
Charles I.	"	0	14	0
Charles II.	"	1	0	0
James II.	"	1	4	0
William and Mary	"	1	11	0
Anne	"	1	13	0
George I.	"	2	0	0
George II.	"	2	15	0

FOREIGN ITEMS.

THE first complete roller flour mill in India has just been built by the Bombay Flour Milling Co., Limited, at Bombay, India. The mill uses the system of H. Simon, of Manchester, England.

J. HARRISON CARTER, milling engineer, of London, England, has recently shipped the

machinery for a roller mill for Messrs. Balfour, Williamson & Co. at Corinto, Chili, South America.

THE losses by mill fires in Great Britain during the year 1884 amounted to nearly \$900,000.

D. UHLHORN of Grevenbroich, Prussia, has recently patented a rye hulling machine which is said to give excellent results.

A VERY large grain elevator is nearly completed at Liverpool for the reception and storage of grain. It will be thoroughly equipped with grain cleaning and automatic weighing machinery.

BUDAPEST milling companies are fairly well satisfied with the business for 1884, after taking American competition into consideration.

MILLING schools will, no doubt, soon be in operation in Paris.

A GERMAN writer says that there will doubtless be yet a considerable change made in the manner of making flour. The present revolution has been too rapid to be entirely devoid of defects. It is scarcely possible to predict what kind of flour will be made a century hence. Possibly, then, the milling methods of to-day will be considered obsolete, as the majority of millers now regard the old style of low-milling. Such a complete change as has taken place during recent years can scarcely be looked for. Improvements in details may be looked for. The present methods of cleaning and bolting are not yet perfect by any means, and will surely be improved. The object of perfect milling is to produce a flour free from bran, and a bran free from flour. This has not yet been done and it is possible that the flour of the future will approximate the desired object.

RUSSIAN VS. AMERICAN WHEAT IN SWITZERLAND.

REPORT BY CONSUL-GENERAL M. J. CRAMER, OF BERNE.

Referring to my dispatch No. 67, of the 23d of August, concerning the danger of Russian wheat driving American wheat from the Swiss market, I have now the honor to further inform you that the rich harvests of the present season in Russia, as well as the masses of wheat stored in various parts of that country, especially in Odessa, and the reduction of the through freight tariff, leave little doubt that Russian wheat will supersede American wheat in Switzerland and South Germany.

The Russian wheat dealers strain every nerve to supply the markets of Central and Southwestern Europe with this article. They are supported in their endeavor by the low cost of transportation, both by railway and sea and river steamers; in consequence of which Russian wheat is offered at a very low price.

All these circumstances cause a constant increase in the export of wheat, from Russia into Italy, South Germany, and Switzerland, via Genoa, Marseilles, Antwerp, and Rotterdam; so that this country is now almost entirely supplied with Russian wheat.

The freight of wheat from Odessa to any one of these ports is from 25 to 40 cents per 100 kilograms, and from Antwerp up the Rhine to Mannheim 16 to 18 cents; while from Rotterdam it is as low as 10 cents per 100 kilograms.

Statistics show that the export of American wheat has decreased while its production has been increased. There must, therefore, be a necessary fall in its price. What is to be done? In order to furnish an outlet for the surplusage, both its price and the cost of its transportation must be reduced.

Let American wheat exporters send a competent person to Europe, whose duty it shall be to study the wheat markets of England, Germany, Switzerland, &c., as well as the question of transportation of wheat from the ports of Genoa, Havre, Marseilles, Antwerp, and Rotterdam to the wheat centers of the interior, and form commercial connections with such centers, by offering a good quality of wheat, at least at the same price as Russian wheat can be purchased for. American wheat might be cheaply transported from New York, Philadelphia and Baltimore to any of the above-mentioned ports, either in freight steamers or in sailing vessels, or in both, and by judicious management it may regain the command of the markets of England, South Germany, and Switzerland.

THE KNEADING OF BREAD

Our contemporary, *L'Echo Agricole*, publishes an interesting opinion of M. Ch. Tonaillon, in reply to a correspondent as to whether kneading by machinery produces bread sour and hard to the taste, with a tendency to dry and harden more quickly than bread kneaded by hand.

In the course of his reply M. Tonaillon stated that he does not make any distinction between dough kneaded by hand and that manipulated by machinery of a good system, provided the workmen entrusted with the work are efficient.

Indeed, kneading by no means contributes towards the intelligence of a man. The doughing machine is an instrument that only yields satisfactory results in proportion as it is worked and regulated by an experienced hand. If this state of things already exists in the bakery of our correspondent, the bad quality of the bread must be ascribable to some other cause than the kneading. The want of softness and tendency to dry too rapidly may arise from several causes:

1st. From a protracted fermentation, which diminishes the elasticity of the gluten, and does not leave it sufficient vitality to rise after turning.

2d. From the use of water too hot or too cold.

3d. From using an oven of low temperature, which is detrimental to the prepared bread, and having a bakery in which the bread is exposed to cold on being taken out of the oven.

4th. From the use of badly mixed flour, which always produces bread of a hard character, which crumbles away when it is stale, and the crumbly portion of which breaks into a kind of sand in the mouth, which is swallowed with difficulty. This is the defect of English bread. In order to digest this, it must be cut into very thin slices, which are generally covered on both sides with butter. In this state the bread reaches the stomach, but without having undergone the first stage of digestion which imparts to well-made bread the moment it mixes with the saliva a sweet sugary taste, which induces people to eat it with pleasure without wishing to leave off eating.

Bread is a nutriment apparently specially intended for man, as he is the only being whose saliva possesses properties for saccharifying starch. This change even takes place spontaneously in the mouth, but only in the case of bread made from mixed flour. Flour of a gritty nature, which the English call "strong," only produces a watery and insipid kind of bread, to which the French could never get accustomed.

The preference for mill stones dressed by means of the diamond has been more general than that for roller mills.

In the meantime we should advise bakers to always give the preference to mixed flours, by which means they will avoid the objections complained of.—*The Miller*, (London).

THE ANNUAL BANQUET OF THE GEO. T. SMITH MIDDINGS PURIFIER CO.

THE GEO. T. SMITH MIDDINGS PURIFIER COMPANY gave its customary annual dinner on New Year's evening to its traveling salesmen and principal employees at the Hibbard House under the direction of Major Clark. To say that the affair was elaborate and that it fully met the expectation and desire of those most anxious for its success but feebly expresses the facts of the case.

The menu embraced all that was desirable on such occasions and from its exhaustiveness one would judge that no one was more familiar with the wants of a critical and habitually well-fed company than Major Clark. Everything was presented in the most beautiful and appropriate style, the wines were of the best brands and flowed as freely as water, thanks to the liberal and congenial officers of the Smith Middings Purifier Company and the efficient manner in which their directions were carried forth.

There were between forty and fifty plates laid and all were occupied and enjoyed.

John E. Winn, the youngest representative of the firm, was selected to present to Mr. Geo. Sherwood, the superintendent, in behalf of the officers of the company, a beautiful and expensive Elgin watch as a token of the latter's appreciation of Mr. Sherwood's valuable services and faithfulness and of the economical manner in which he had administered the affairs of his department.

Mr. Sherwood was completely surprised and almost overcome by his emotions, but arose to his feet, tendered thanks and proposed a toast to the President and directors of the Middings Purifier Company, to which Col. Rodney Mason responded in an eloquent and entertaining speech. He drew a graphic picture of the mills of our fathers and the improvements wrought by the introduction of the wonderful purifier. To Geo. T. Smith more than any other one man in this or any other country, was due the honor of the grand achievements found in the milling of the present. Col. Mason recited the most familiar difficulties the Purifier Company had in the early days of its history, the prejudice that existed in the minds of millers against improvements, and what they styled "new fangled hinges," and the great revolution which had been wrought. Those who formerly considered Mr. Smith a crank and his invention a "clap-trap," now blessed him and it as benefactors of their class. In the course of his congratulations to Mr. Sherwood, the speaker said: "I also have been a recipient of the generosity of the company we represent, but my present was a bigger

thing than a watch—it was a clock—and I feel that my gratitude is as much greater than Mr. Sherwood's as my clock is greater than his watch. While this is a very fine clock and of great intrinsic value, such value has no comparison to its value to me as an expression of the satisfaction of the Company with my services in the past, and it places me in a new position in my relations with the Company. Heretofore I have been as an attorney to his client; hereafter our relationship will be increased by that as of a friend to a friend, and feeling my interest in their success thus increased, if in the past my efforts to serve have been great, in the future they shall be greater, and what I have to do I shall do with all the might within me. This is no ordinary clock. It is no cook-oo clock, nor was it made in Waterbury, Conn. It has chimes that announce each quarter hour and a gong which sounds with cathedral tone the knell of the dying hours, and as its sweet music fades away, each hour my memory of the kind givers shall be aroused and my energies spurred to new activity to promote their success.

Col. Mason himself is entitled to no small credit for the wonderful change of sentiment in regard to the machines manufactured by the Smith Company, for in the opinions he advanced and the obstinate resistance he met, he no little contributed to the advancement of the machine. It is fair, however, to record that Col. Mason's opinions were not written or his learned and thoughtful arguments hurled at courts by him for the purpose of provoking discussion, but were the calm and deliberate opinions of an attorney who had made a careful study of the principles involved in the invention for which he contended. Happily all these discussions have been determined by the courts to which they have been referred and the Geo. T. Smith Middlings Purifier Company's machine stands to-day before the law as well as before the milling public as the only legitimate machine in this country for the purification of middlings. To say that Mr. Smith should thus have hit upon all the fundamental principles of a middlings purifier, but faintly expresses the astonishment and gratification of the milling fraternity.

As a representation of the interest American millers feel in the improvements engendered by the Geo. T. Smith Middlings Purifier and Centrifugal Reel, Mr. Jno. R. Reynolds, head miller for H. A. Hayden & Co., responded to the toast: "The American Millers." While paying tribute to the homely and faithful picture presented by Col. Mason, he gave his own experience in milling and the objections he had to overcome from the head miller in charge of the mills in which he was employed when the purifier was first presented, and recited the almost miraculous achievements accomplished by its introduction, not only in the mills which he now superintends, but in all the intelligent milling world. Mr. Reynolds in part attributed the success of this company in holding its usual business in this exceptionally dull time by their readiness and generosity in adopting and applying all improvements to their machines—come from whatever source and cost what it may—until they had succeeded in offering to the trade an article which had no equal for the purposes for which intended, and added the old saying that there is lots of room for trade on the top shelf, but none on the second or third below.

Hon. W. K. Gibson being called, responded in his usual happy way, referring to the former annual dinners which he had had the pleasure of attending, replied in a jocular way to the feeling remarks made by Col. Mason in thanking the company for the elegant clock presented him. Mr. Gibson said he had no cook-oo at his house, and he would consider it in order whenever the company thought proper to recognize him in that way. He referred to the advantages the city of Jackson derived from the company's business, the wonderful extent of it and its phenomenal growth in this country as well as abroad. Even now, when almost every other firm is complaining of hard times, reducing their capacity, curtailing their expenses and business—many of them closing their shops entirely—this company not only finds itself able to run to its full capacity but finds it necessary to enlarge their works, increase their force and are behind their orders. He referred to a conversation he had had with one of the officers of the company in which he learned of their large trade in Europe, and the necessity they had found for detaching Mr. Myron W. Clark from the work he has so long and successfully been engaged in here and sending him abroad to take a general supervision of their European trade. He supposed one reason why they selected this gentleman was because of his extreme modesty and inconsiderate proportions. He presumed the scheme of the company was to send some one who would not attract attention or speak except when spoken to. Mr. Gibson referred to the great improvement in the business

since Geo. T. Smith took its management, and to the improvement in the appearance of the men he now saw at this dinner as compared with former years; gave them their full share of credit for this condition of affairs, and congratulated the president and officers of the company, in the liberal policy which had surrounded them with such talent and ability.

Toasts were proposed and responded to by Clark, Colwell, Col. Dickey, Harmon, Winn, and others, and at midnight the company dispersed, each and all delighted with the elegant and sumptuous entertainment received, and with redoubled resolutions to accomplish more in the year just born, than was done in that just dead.—*Jackson Patriot*.

GLUTEN TESTS FOR FIXING VALUES OF WHEAT.

[From address of Prof. F. Noble, before the Naturalists' Association, at Madeburg, Germany, Sept. 30, '84]

In judging the values of wheat flour it is well known the baker lays the greatest stress upon baking qualities, that is, those qualities which ensure a porous, light and ample product. These qualities depend upon the proportion of gluten and its elasticity.

The quantity of gluten obtained by careful washing out of wheat flour varies from 15 to 40 per cent., 28 being a good average. A flour from which no gluten can be washed out is seldom found.

Gluten in different wheats differs much in mechanical attributes. Millers make the distinction of "short" and "long" gluten according to the tenacity, the "short" having poorer baking value.

While quantity and elasticity of gluten determine the value of flour, it can not be said that the maximum of elasticity insures the richest flour or greatest working adaptability. On the contrary bakers claim that such flour makes hard, dense bread, a medium quality being most useful. However, the market value of a wheat depends upon the degree of tenacity of the gluten of the flour made from it, the latter being usually mixed for baking, with inferior products.

The different mechanical properties of gluten depend upon the make-up of its nitrogen constituents. Of these, gliadin (vegetable glue), mucudin (vegetable mucous) and gluten caseine (vegetable caseine) give it elastic properties, while gluten fibrine, according to H. Ritthausen's experiments, is very brittle, and causes marked deterioration. The vegetable albumen is washed away with the starch. At least, we continually observe a loss of nitrogen in washing out the gluten as compared with the original product, which has not yet been closely subjected to experiment.

This and other points offer matter for consideration, which in part they have already received. Independently of that, however, we can do service to agricultural workers by stating that we have found it possible in our experiments to secure approximately the same amount of gluten of similar elasticity from two tests of a certain flour.

The aleurometer, a small brass cylinder, is supplied with 7 grams ($\frac{1}{4}$ oz. avoird.) of washed out gluten. This cylinder is placed in a larger one, which is immersed in an oil bath in a copper kettle. In this manner the gluten is subjected to a temperature of 200 degrees C. for a period of 20 minutes. The quality of the gluten tested is shown by the height to which it rises in the cylinder.

The practical value of the aleurometer is evident. In it the farmer would possess an exact measure of the value of the wheat which he sells, while to the miller it is equally important. Different prices are paid for wheat according to its quality, baking properties being a matter of first consideration. Values vary 20 per cent. or more in the markets, being determined by color, form and variety of the grain. The floury, copiously yielding English wheat, for example, is less valued than the glossy Hungarian and South Russian sorts which are rich in gluten. But the variety alone should not be regarded as deciding the adaptation of wheat to milling purposes. Soil, fertilizers and weather influences the worth of grain favorably or unfavorably in a great degree.

"Square-head" wheat, grown in Saxony in 1882, and tested at the experimental station in Tharand, exceeded in gluten contents to an astonishing degree the ordinary value of that variety. This was also the case with the Australian "pearl" wheat cultivated experimentally at Tharand by order of the minister of the interior.

AMERICAN VS. FRENCH FLOUR IN THE CANARIES.

REPORT BY CONSUL H. B. M'KAY, OF TENERIFFE.

Although my consular district has at all times produced more or less wheat, the local millers, through want of proper appliances, could not make a bright fine flour free from bran that the demand called for in the best qualities of bread.

French flour many years ago began to supply the need, and Marseilles millers have since found these islands one of their best customers.

A fortnightly line of steamers kept the market constantly supplied with a fresh article, under circumstances against which neither Spain nor the United States could compete.

The want of success with Spain consisted in the high rates, owing to the excessive tariff there at which the peninsular farmers met a ready sale for their grain. The United States flour, however, was practically excluded from the local demand by other causes, which I proceed to set forth.

This should be prefaced by the observation that all bread is eaten cold, and is universally supplied by the bakers, no one pretending to make bread in their kitchens. This threw the selection of the flour into the hands of the bakers, and they looked up a quality that would admit as much water as possible to give weight, and which also admitted a good amount of yeast, which made the loaves, which are of two or three uniform sizes, appear larger, and thus more satisfactory to the public eye.

The bakers have pretended that American flour does not meet their wants in the above particulars, and although there has been some flour imported from time to time, from New York, the amount has never reached one-fifth of the quantity received from France.

I have long been convinced, however, that the difficulty with American flour does not consist as much in the quality nor in the price as in the difficulty of keeping bakers regularly supplied with an article of an even quality, which advantages Marseilles has enjoyed, because of her periodical steamers, and because the millers there take pains to keep certain grades of flour always on hand.

The public have of late years looked suspiciously upon this French flour, and have favored the American article so far as their means allowed.

This has caused the bakers to look upon the kind last named with favor, and as Marseilles is now, owing to the cholera raging there, entirely shut out of this market, I hear of large quantities of flour expected from the United States, and have no doubt that the result will be a permanent increase in the consumption of our flour.

The want of constant periodical communication, however, will always work against the American article, and until a line of steamers is established we should not look for permanency in that trade.

From importations made during the last five years, I calculate that if the French article from any cause could be replaced by American flour the consumption would amount to at least 2,000 pounds per month, for this province, after allowing for a liberal consumption of the native article.

Besides flour, our exports under careful manipulation of parties acquainted with the needs of the people here, could no doubt be increased in leather, soup-pastes, soap, and various other articles of which France has enjoyed almost a complete monopoly.

I have but little doubt that, if our products could once gain a footing, and constant, regular communication could be relied upon, we could hold our own against all comers.

THE ESTIMATION OF GLUTEN IN FLOUR.

BY WM. FREAR, WASHINGTON, D. C.

In determining the value of various flours, the most potent factors are the quantity and condition of the albuminoids. The great influence of the latter factor upon the products of baking is often overlooked.

But in noting the effect of "ageing" upon many varieties of flour, its importance is immediately seen, for in this case both fresh and old samples contain about the same quantity of albuminoids, while the latter sample frequently loses quite appreciably, and sometimes altogether, the condition which makes the formation of tough, spongy dough possible; consequently the baking products from fresh and "aged" flour made from grains equally valuable in the fresh state exhibit widely contrasted qualities.

In recognition of the importance of the nitrogenous constituents of flours in their relation to the "nutritive value," there have been devised for their estimation several simple methods capable of use without technical skill, and with very simple means.

These methods may be classed as chemical and mechanical. The former are generally volumetric processes, based upon the coloring action of nitric acid upon albuminoids, and therefore serve only to give an idea of quantity without regard to condition.

In the mechanical process, on the other hand, the steps taken are very similar to those adopted in the preparation of flour for baking.

This process depends upon the insolubility and coherency of the albuminoid particles of

dough when in proper condition, and it consists essentially in kneading in water the stiff dough made from a given weight of flour, until the starch and soluble matters are removed, and weighing the residue. The gluten, as this residue is termed, does not exist in this state in the flour, but is formed very rapidly upon the addition of water. The nature of this change is not fully understood, but it is generally regarded as a kind of fermentation, due, according to Weyl, to the presence of an unorganized ferment, which he terms "plant myosin."

The process in detail is as follows: Weigh out 20 grams of the flour to be tested, or if a quite delicate balance is not at hand, a sufficiently large quantity may be taken to diminish the error due to lack of delicacy in the balance used. The flour must be carefully worked into a stiff dough by the addition of 50 to 75 per cent. by weight of water. Some chemists specify 50 per cent. invariably, but as securing a close similarity in the physical character of the dough with different samples is of the first importance, this rule is not to be commended. With duplicate tests, however, the same quantity of water should be used. The preparation of the dough may be considered complete when it is smooth, perfectly homogeneous and without particles of dry starch on its surface.

Many authors recommend that the kneading in water shall follow immediately after the preparation of the dough; but since gluten seems to be a fermentation product, its quantity is affected by the duration of fermentative action. For a long time this point was not subjected to experiment, but recently Bènard and Girardin have found quite an appreciable increase in the quantity of gluten during the period between thirty minutes and three hours after the preparation of the dough. My own experiments, however, indicate that, practically, the action is complete at the end of an hour; accordingly the dough is allowed to stand for this time previous to the separation of the starch, etc.

This separation is effected by kneading the dough by hand under a fine stream of water from a faucet or in a dish; the wash water is passed through a fine linen cloth, which prevents the loss of loose gluten particles; the operation continues until the water ceases to be clouded by the separating starch. The ease and quickness of this part of the process depend altogether on the coherency of the gluten.

The "gluten" is then freed as far as possible from the water by pressure in the hand, and weighed. The water contents of this "moist gluten" varies generally between 60 and 70 per cent.; but the difficulty in observing uniform conditions of pressure gives rise to inexactness, and makes the determination of the "dry gluten" advisable, when possible.

By reason of the hygroscopic nature of gluten, the process of drying is quite difficult. Partially drying, pulverizing and then drying to constant weight, which some recommend, can be accomplished without loss only by great caution. Allowing it to stand for five or six days in a steam oven completes the drying quite thoroughly, but the long period required is objectionable.

Allowing it to remain overnight in a steam oven, and then heating it in an air bath at 100°-120° C. for five or six hours, gives results closely agreeing with those obtained by the other methods, and is much easier and quicker.

The wash water from the dough contains a considerable quantity of soluble albuminoid matter, so that the gluten does not contain all the albuminous matter of the flour; but, on the other hand, it contains in the dry state a large amount of impurities—according to Richardson, about 25 per cent.—and this ratio is quite constant. So that practically, with good flour, the quantity of crude gluten is about the same as that of the albuminoids estimated by the most exact chemical methods, rarely varying from it either way more than 1.5 per cent. Good flours should contain from 9 to 14 per cent., though a fair flour from the Pacific coast may fall below 9 per cent. With poor flours, however, the gluten may fall far below the amount of albuminoids, and their small value is shown by its not reaching the proper percentage.

The physical qualities of the gluten, also, are of value in determining the quality of flour. In the moist state it should be of a light yellow color, and in structure homogeneous, plastic, elastic and with a very considerable degree of consistency. Adulteration, molding or other changes, under which the quality of a flour deteriorates, will, whether quantity be affected or not, very markedly impair the above mentioned qualities of the moist gluten, and consequently all differences, as well as those of quantity, must be considered in the final conclusions touching the relative values of different samples.—*Druggists' Circular*.

UNITED STATES MILLER.

E. HARRISON CAWKER, EDITOR.

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MILWAUKEE, FEBRUARY, 1885.

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER. You will thereby oblige not only this paper, but the advertisers.

CAWKER'S AMERICAN FLOUR MILL AND MILL FURNISHERS' DIRECTORY FOR 1884, published by E. Harrison Cawker, of Milwaukee, Wis., and sold for \$10.00 ten dollars per copy, is now ready for delivery. It shows the result of an immense amount of labor, careful inquiry and studious attention to details. It is without doubt the most accurate trade directory ever published, and will be of untold value to those desiring to reach the milling industry of America.

We glean from this neat volume of 200 pages containing no advertisements, that there are in the United States of America and our neighboring Dominion of Canada 25,500 flouring mills, taking them as they go great and small. The work indicates in about 10,000 instances the kind or kinds of power used by the mills, and the capacity in barrels of flour per day. It further indicates cornmeal, buckwheat, rye-flour and rice mills. It shows that the number of mills in the various states and territories of the United States are as follows: Alabama 453; Arizona 17; Arkansas 343; California 222; Colorado 54; Connecticut 288; Dakota 81; Delaware 98; District of Columbia 5; Florida 66; Georgia 631; Idaho 21; Illinois 1123; Indiana 1089; Indian Territory 14; Iowa 790; Kansas 489; Kentucky 713; Louisiana 61; Maine 28; Maryland 353; Massachusetts 340; Michigan 846; Minnesota 487; Mississippi 386; Missouri 1025; Montana 21; Nebraska 25; Nevada 13; New Hampshire 182; New Jersey 442; New Mexico 32; New York 1902; North Carolina 848; Ohio 1443; Oregon 145; Pennsylvania 3142; Rhode Island 51; South Carolina 274; Tennessee 801; Texas 730; Utah 110; Vermont 247; Virginia 781; Washington Territory 61; West Virginia 447; Wisconsin 777; Wyoming 2.

In the Dominion of Canada we find the record as follows: British Columbia 17; Manitoba 54; New Brunswick 198; Nova Scotia 12; Ontario 1160; Prince Edward's Island 39; Quebec 531. Total 25,500.

Taking the work throughout, and it is highly interesting to all concerned in the trade, and we take pleasure in recommending it.

See Page 58.

MILWAUKEE brewers sold 176,587 barrels of beer during the year 1884.

THE fire loss in the United States and Canada for 1884 is estimated at \$112,000,000.

BROTHER MITCHELL, of the *American Miller*, made us a pleasant call on a cold day in January.

THE Dominion of Canada imported over 300,000 barrels of flour in 1884, and Canadian millers are urging a doubling of the import duty on flour.

THE nine flouring mills in Detroit, Mich., made 249,914 barrels of flour during the year 1884, of which 153,312 were shipped, and 96,602 sold for home consumption.

THE U. S. Treasury Department has issued an order allowing payment of drawbacks on flour sacks to exporters of flour. This will prove quite a saving to large exporters.

THE Baltimore *Manufacturers' Record* says that 1865 manufacturing enterprises were organized in the Southern States during the year 1884 with an aggregate capital of \$105,000,000.

A SYNDICATE of Canadian capitalists with a capital of \$1,000,000, it is reported has been purchasing large quantities of wheat in Manitoba recently for shipment to Montreal via Pt. Arthur, as soon as navigation opens.

WM. TRUDGEON, of the Richmond Mfg. Co., Lockport, N. Y., came up to Milwaukee recently from Nashville, Tenn., just in time to make connections here with a Manitoba wave. He reports business fairly good in the South.

THE hominy millers of the United States met in convention recently, in St. Louis, and organized the Hominy Millers Association, of which Geo. J. Heilman, of Evansville, Ind., was elected president, and Geo. N. Flannagan, of St. Louis, secretary. There are about 100 hominy mills in the United States, and it is expected that all will join the organization,

as it will undoubtedly prove beneficial to their interests.

MILLERS contemplating the making of changes in their mills, adding new machinery or building new mills, cannot find a better time to make contracts than at present. Every thing seems to have reached bottom prices, and many things have already advanced in price.

WE have received a handsome copy of the 1885 Catalogue and Price List of Flour-mill Machinery and Engines, just published by Messrs. Edw. P. Allis & Co., of Milwaukee. It contains about 240 pages, and its contents are of great value to flour-mill owners, who will be furnished with copies upon making application to Messrs. Edw. P. Allis & Co.

JOHN D. NOLAN concludes his address to the Pennsylvania Millers by saying:

"At the present time among those who have given rolls a thorough test, the following will be found the main rules laid down and followed by their most earnest advocates. 1. Reduce the wheat on break rolls made of chilled iron. 2. Reduce the middlings on smooth iron rolls or porcelain rolls. 3. Reduce the clean middlings by means of buhrs. The modifications of roller milling in mills making from 150 to 500 barrels a day, with the retention of existing machinery, will facilitate conversion of old mills into modern milling plants, but it is not advisable in small mills. A first break and brush scalper, in connection with the buhrs and a pair of bran and middlings rolls, will make a much better flour when the wheat is thoroughly cleaned."

HARRY S. KLINGLER concludes his article on "The Future of Milling," as follows:

To summarize, the perfecting of systems of milling aiming to produce the highest grades of flour and the largest yield that human ingenuity, skill and application can accomplish; the adoption of the most economical means in the manufacture of flour, seeking to obtain a barrel of flour at the least possible expense; the survival of the fittest, crowding into the background or out of existence entirely, mills that cannot attain to the high art, or mills not favorably located as to the supply of their material or the sale of their product; these will be the direct results of increased production and a further development of the art of milling, with no prospects of a greatly enlarged demand for flour, and can be accepted as the natural consequences of the present condition of the milling industry, as foreshadowed by the signs of the future.

CORRESPONDENCE.

[From J. D. Hurst & Son.]

AURORA, Oregon, Dec. 15, 1884.

Editor *United States Miller*:

The general view of the grain and milling business of Oregon is not very flattering at this time. There is a general want of export demand, which we here so much depend upon in order to be successful, as this is a great wheat producing country, and the consumption at home is very little.

Five of our largest export mills are not running at all this season, and those that are running are forcing the home market and are necessarily running on small margins, and the out-look for the future is not promising unless the export trade should become better. There is plenty of good milling wheat in the state, but farmers are not free sellers at the present low prices, and only sell as necessity compels them. Wheat is now selling at \$1.07½ to \$1.15 per cental in the Portland market. Millers' wages are not as good as they have been, but still they are better than circumstances would permit.

In 1883 there were quite a number of new mills built, and some old mills remodeled to the Gradual Reduction System, but during the past year but very little has been done in that line, and the prospects for 1885 all depend on the export demand for our bread-stuffs.

In Eastern Oregon and Washington Territory there are a few new mills being erected in different localities, principally for custom work. What we mostly need in Oregon is an increased population and capital to work up and utilize our raw materials, of which we have an abundance of nearly every thing that any country can produce, and a climate that cannot be excelled. There is just now, a considerable talk about diversified farming in the Eastern States, and we think the Oregon farmers need it bad, as they seem to have the one-crop craze, (wheat), and we import butter, cheese, eggs, bacon and lard, when there is no country under the sun that can produce these things better than Oregon. But we think the low price of wheat this season will bring about a change and will open the eyes of the farmer.

Yours, very truly.

J. D. HURST & SON.

THE SMITH PURIFIERS IN EUROPE.

Curious to know of the progress being made by the Smith Purifier Company, and its foreign relations, a *Patriot* reporter visited the works recently for the information desired. He found Mr. M. W. Clark disengaged and enquired of him when he was to sail for Europe. He replied that it was expected he would be able to get away some time during the month of April. Before going, Mr. Clark, with Col. Mason, the attorney for the consolidated company, are obliged to visit California to take evidence in the infringement suit now in progress against the users of the Case purifier.

Reporter—I supposed, Mr. Clark, that the company had conquered all opposition, and had no more trouble about infringements.

Mr. Clark—We have, generally speaking. Occasionally a small concern will spring up, gathering together the several devices of other inventors, and among the rest that of our company, and claim it as an invention to combine parts of other people's property, offering their machines to the trade, and find occasionally a customer not familiar with the merits of milling machines, thus necessitating an action being brought to compel them to respect our rights and protect the millers against further imposition. These concerns offer their guarantees as security for the users, first carefully providing for an emergency by so arranging their affairs as to enable them to beat an execution in the event of judgment being obtained. This was fully illustrated in our Canadian business. When we came to collect the royalties due from millers as users, not a single case came to our knowledge where the manufacturers made good their guarantee—lots of guarantees, but not a cent to make them good.

Reporter—What is the nature of your business in Europe?

Mr. Clark—Our business there has been rapidly increasing since Mr. Smith introduced our machines about four years ago, and has been neglected so far as the company's personal attention is concerned, notwithstanding which it has grown to such an extent that it now absolutely requires careful personal attention from some one connected with the company who is thoroughly familiar with the milling process adopted here.

Reporter—Have you any objection to giving me some information as to the extent of your business abroad, and to what countries you are now shipping machines?

Mr. Clark—I have no objection whatever. You can look at our order book which will show you our trade for the last three weeks.

The reporter was then shown the order-book by Mr. George Sherwood, superintendent, and among the large orders received within the time mentioned by Mr. Clark, noticed the following:

Germany.....	75
France.....	28
Argentine Republic.....	7
Italy.....	13
Moscow, Russia.....	7
Australia.....	50
England.....	70

Reporter—Mr. Clark, what is the average number of machines manufactured by the company per week?

Mr. C.—I am not sufficiently familiar with the shipments to give you a correct reply, but think last week was not an unusual week. When our shipments amounted to 84 machines.

Reporter—How are you enabled to manufacture and send abroad machines complete? I should think freights would be so high as to prevent it.

Mr. C.—As you passed through the shops you noticed the complete and systematic organization of our forces, and the conveniences for easily handling this class of work. You also undoubtedly noticed the high grade of all our special machinery for manufacturing. This enables us to manufacture more cheaply this high grade of work than competitors who are manufacturing in a small way could possibly do. Our reputation has been made, and our trade secured by the completeness of each separate machine sold in the market. This has been Mr. Smith's special ambition, to build a machine so good that no competitor could afford to build it for the money the company sell them for, even were their rights under the company's patents secured to them.

Thus terminated the interview with Mr. Clark. But the reporter was forcibly impressed with his closing reply, and could not help but think that, if all so-called monopolists would manage their business on the same principles adopted by this company, no reason would exist for complaint against this class of manufacturers. After visiting the various departments of the establishment, seeing the large number of men employed, the vast amount of material consumed, the reporter was also most forcibly impressed with the great benefit which all classes in Jackson derive from this prosperous thriving and constantly growing enterprise.

Mr. Clark, who is an old resident of Jackson, has been connected with the company in

an important position for many years, and his selection as the manager of the European business is evidence of the high esteem in which he is held by the company. He with Col. Mason will leave for California in a day or so, and as soon after his return as practicable, he will take his departure for Europe.—*Jackson (Mich.) Patriot*.

A RATIONAL VIEW OF BOILER EXPLOSIONS.

When the cork of a soda-water bottle is set free it escapes with considerable violence and noise. It behaves in a manner like a projectile shot from a gun. There is this difference, however, between the projectile and the cork—that the whole of the projecting work must be done on the latter after it has left the neck of the bottle. In the case of a gun, the work is done on the shot while it is moving up the barrel and acquiring velocity. The motion of the cork is extremely slow until it escapes from the bottle. The motion of the projectile from the gun is most rapid at the moment it leaves the muzzle. We have a strict analogy between the flight of a soda-water bottle cork and that of a bit of boiler plate. The cast iron top of the dome of a locomotive was a few years ago blown through the roof of a station. All the bolts securing the dome top gave way, and it sailed through the air some hundreds of feet.

Now, it is very easy to say that the flight of this mass of cast iron is readily explained. "It was blown into the air." "It was violently forced off by the steam." "The steam shot it off," and a dozen similar explanations may be given. But engineers do not rest content with vague statements of this kind. They see that the cast iron must have been put into very rapid motion indeed in a very minute fraction of time, and they want to know how the motion was actively impressed on it. As soon as we begin to use figures, we discover that vague generalities really convey no adequate idea at all of what takes place.

Let us suppose, for the sake of illustration, that the cast iron dome was 18 inches in diameter, 24 inches area, and that it weighed 100 pounds. Also, we shall assume that it was projected to a height of 100 feet. In order that it should attain to this altitude, it must have an initial velocity at least as great as that which it would acquire if it fell 100 feet. Allowing a little for the retarding influence of the air, the initial velocity must have been 82 feet per second. The boiler pressure being 120 pounds on the square inch the total effort lifting the dome would be 30,480 pounds. We have, therefore, a force of 30,480 pounds, a velocity of 82 feet, and a weight of 100 pounds. Through what space must this force operate on the weight? A very simple calculation suffices to show that the force of 30,480 pounds must act through a space of about .32 of a foot. It will be seen from this that the steam must have exerted its full pressure of 120 pounds on the square inch until the lid of the dome had been parted from it by a distance of about 4 inches.

In boiler explosions the same thing happens. The pressure follows, so to speak, the flying fragments for a certain distance after disruption takes place. In the same way, the column of escaping carbonic acid gas rising from the neck of a soda-water bottle imparts a high velocity to the cork after this last is quite free of the bottle. It is in this way that the projection of fragments to a great distance is brought about, and we do not think it necessary that water should be called into play for the mere projection of portions of the plates. As we should state the case, the phenomenon of a boiler explosion would be somewhat as follows: First, rending takes place through a weak joint or corroded plate; secondly, there is a violent outburst of steam; thirdly, there is a fall in pressure; fourthly, portions of the water are propelled with great violence against the boiler shell, which is shattered thereby; fifthly, the steam generated from the liberated water imparts, in the way we have tried to explain, high initial velocities to the fragments, converts them into so many projectiles, and spreads ruin around.

The point worth special notice about all this is that the steam keeps together, so to speak, and does not escape by fissures or cracks. It might be thought that the moment the steam dome cover, which we have already used for the purpose of illustration, was raised at all, the steam would all rush out sideways, and that the cover would be projected but a few feet. This is not the case; the steam does not diverge to the right or left; its molecules advance, each in a straight line, behaving like a minute projectile; and this columnar advance of a gas, free to diverge right or left, but going straight on, is the main cause of the violence of boiler explosions as manifested by the flight of fragments to great distances.—*London Engineer*.

TWENTY STATEMENTS ON MODERN MILLING AND MILL MACHINERY.

BY J. M. CASE.

There can be found in almost every issue of the milling journals, old-fashioned fellows who still cling to the antiquated system of stone milling, and make grave prophecies of the speedy return to the good old burr. Such articles are misleading and ought not to be admitted to a place in any first-class milling journal.

There is nothing more clearly demonstrated than the fact that burrs, for manufacturing flour, have fulfilled their mission. It is equally clearly demonstrated that rolls are superior to all systems of milling so far developed, and discussions in milling journals should be how to improve and perfect the best known system, or how can we evolve something better, rather than shall we return to the antiquated and abandoned systems of the past.

Taking this view of the subject, I wish to present a few thoughts, condensed into simple conclusions, which my experience in the erection of mills and milling machinery has led me to during the recent revolutions in milling.

1. Milling consists essentially in granulation and separation. That system which will reduce the wheat berry to flour with the least intermingling of the branny fiber, or germ product, and at the same time keep up the proper granulation, is necessarily the best system.

2. In burr milling there are an innumerable number of fine particles of bran intermingled with the chop, in such a manner that no system of bolting, or re-bolting, can ever remove them. This is due to the abrading action of the millstone. No further statement need be made to answer all the sophistry ever written in favor of stone milling.

3. Next to a perfect reduction of the wheat to middlings, a correct system of separations is most important. This science, if it can be called such, may be summed up in three distinct principles. First, remove all coarse stock before making flour. Second, make no returns. Third, don't let good middlings or flour reach the tail of the mill. The first proposition is essential to get clear flour; the second, to prevent the accumulation of impure material; the third, to prevent a large percentage of low grade. This covers the whole field, and the intelligent programmer who can carry it out with the least possible machinery or bolts is the best expert.

4. "Seam-dirt" does not grow in a wheat berry. Hence, the advantages hoped to be gained by splitting the wheat through the seam and sending the half berries to a millstone are often delusive. The brown flour obtained from the first break is due more to the scouring action of the break machine and scalper than to any deposit in the seam.

5. The best first break machine is a roll with two corrugations to the inch, breaking against a stationary, smooth surface. A stationary surface is preferable to a movable one, owing to the fact that it does not crush or soften the berry so much.

6. The best corrugations for the breaks are two, eight, twelve, sixteen, twenty and twenty-four; the first three breaking against the back of the teeth and the last three front, cut saw tooth.

7. Roller mills, like sewing machines, are very similar in construction; differing mainly in the feed and adjustments, nearly all having adopted nearly the same standard corrugations, hence all will do good work; but some are more complicated than others; some have a less effective feed than others, and hence, require more looking after, and are liable to make more uneven work and less perfect finish.

8. Some of the essential features of a roll are as follows: The roll should not depend upon the spring to keep it from running together when the feed runs out. The set should be positive. It should automatically shut off its feed before the roll stops. This will save throwing the rolls apart, and consequently a saving of unground wheat as well as labor. Millers do not know how much is lost by throwing the rolls apart every time the mill stops. I offer this hint for the benefit of manufacturers, as well as millers. They will eventually be compelled to recognize these important features.

9. A purifier is simply a machine calculated to cause a current of air to pass up through the middlings. An old wheat bin forty inches wide and ten feet long, with a shaking riddle applied, and a fan to produce a suction or blast, will make just as good a separation as any machine ever made, so long as the cloth is kept clean.

10. All sub-divided compartments, pockets, combined suction and blast, are of no practical utility, but a positive detriment in the construction of a purifier.

11. A suction and a blast fan are the same in their operation upon middlings. In the one

case there is a minute reduction in the density of the atmosphere above the riddle; in the other case there is a trifling increased density below the riddle. This unbalanced condition causes a current of air, and this current will act precisely the same, whether there be a decrease or increase of the normal density of the air. This thought borne in mind will save inventors many foolish experiments.

12. An octagon or ribbed centrifugal reel will bolt more freely and the cloth will keep cleaner than round or cylindrical centrifugals. The reason of this is two-fold: First, the ribs carry up the stock and drop it upon beaters in large quantities; and second, there is a dead air chamber between each rib which permits the material in motion to reach the cloth more freely. A six or eight-ribbed reel will generally bolt all round, while a round reel will generally bolt only on opposite sides. predict that the hexagon or octagon reels will eventually be universally adopted.

13. Centrifugal reels are best calculated to handle the cut-offs and low grade stock at the tail of the mill. They will make a good separation on any class of stock which has been scalped through cloth nor coarser than No. 9, but no better than the old-fashioned chest, while they are more troublesome and require more power; hence, they are not to be recommended for first bolting.

14. Burrs should not be used to reduce any class of material in a mill, except perfectly clean middlings, and even for this purpose rolls are the superior. Few millers will keep the burrs in perfect condition. It will always pay a miller in changing over to make a full roller mill.

15. Scratch rolls will reduce more middlings than smooth, and are less liable to heat or cake, and will generally make a closer finish; but smooth rolls make a whiter flour, and if a sufficient number are used they are preferable.

16. The number of breaks to do good work depends largely upon the quantity of material, to be operated upon. A five-break mill with light feed will make more middlings than an eight-break mill over-loaded. Millers generally estimate on too little grinding surface for their break rolls to make the best granulation. Six breaks is enough under all circumstances, provided the rolls are of sufficient size for the work desired.

17. The proper speed for a nine-inch roll is 350 revolutions per minute; for a six-inch roll 500. It is preferable to run at a higher speed, rather than be limited, in breaking or flouring capacity.

18. Sharp corrugations for the breaks will make more sub-tails or small pieces of broken wheat, and the break chop will look browner than that made on smooth or rounded corrugation, but at the same time the sharp corrugations make more middlings and of a firmer, better condition, which will purify with much less waste in the dust room, the break flour is more granular, more patent can be made, and the general results are decidedly in favor of a sharp corrugation for the five-inch and six-inch breaks. This has become recognized, not only in this country but all over Europe.

19. Porcelain rolls make an excellent reduction on middlings, but it requires twice as many of them as scratched rolls. They require skillful handling to keep from injuring the grinding surfaces.

20. A 25-barrel roller mill can be made to do just as good work as a mill of 5,000 barrels capacity, and just as economical as to quantity of wheat, low grade, etc. It costs the small miller more per barrel to manufacture his flour than the large one, but if the small miller has a local trade sufficient to keep his mill running he will get better prices for his flour. It is a fact that first-class small mills are making more money in proportion to their investment than the larger ones.

These propositions I have given off-hand as they have occurred to me. I am aware there are those who will take opposite views to many of these statements, but they are honestly made and are the result of several years experience in mill building.—*American Miller.*

THE FUNNIEST RAILWAY YARN YOU EVER READ.

LIVELY TIMES IN A SLEEPING CAR.

"It seemed as if the devil had broken loose among our passengers last night," said the conductor of the sleeping car to two of his comrades, as he sat twirling his blonde mustache in the restaurant opposite the depot. "We had the liveliest kind of a time pretty nearly all night. Oh, I could split my sides laughing when I think of the two Dutchmen, the nervous man and the old dame in berth No. 10. Then there was the bald headed man, too. Ha, ha!"

You want the yarn, do you? Well, I'll begin by telling you that we had a big load—that is, a big load of passengers. We were so full that in several cases we made two friends occupy the same berth. The first

incident that occurred to make things lively was a row, or, rather, a sort of outburst of popular indignation against that pest of the sleeping car, the restless chatterbox. It was a little after eleven o'clock, and we were bowling along at the rate of about forty-five miles an hour. Most everybody had retired to their berths and were trying to get to sleep.

They were seriously disturbed in this attempt by a couple of German fellows, who occupied upper berths close together, and who persisted in jabbering away to each other. Had they talked German it would have been bad enough; but, like most foreigners who cannot speak our lingo, they chose to use English in preference to their own language. And never has English been worse maltreated than it was by those two fellows. As for the nature of their conversation, it was just of that kind which is calculated to put murder in the heart of the man who is compelled to listen to it. It was just about like this:—

"Du, Yustav!"
"Chaw."
"Kaun you schliep, you?"
"Haw?"
"Kaun you schliep, you?"
"Op I schliep kaun?"
"Yaw."
"Naw."

Or the talk might turn something like this way:—

"Du, Yustav!"
"Chaw."
"You know der Ludwig Pfaffenheimerberger, der pig lager bier brewer, vot marriet der Lumpenfeiner's tochter?"

"Haw?"
"You know der pig lager bier brewer, der Ludwig Pfaffenheimerberger, vot to der Lumpenfeiner's tochter marriet was?"

"Op I den Pfaffenheimerberger know?"
"Yaw."
"Heem dot der lager pier prewer vas?"
"Yaw."

"Vot married den Lumpenfeiner's tochter?"
"Yaw."
"Nau, kenne nicht."
"Naw!"
"Naw."

It was about the fifty-ninth time that "Du, Yustav!" had been begun when suddenly the head of a thin faced man, with small black eyes and a big black frown, protruded from the curtains of a berth next to that occupied by Fritz. He was evidently a nervous man, and it was also evident that he was wrought up to the highest pitch.

"You dod-gasted Dutchmen, he cried, furiously, "who in the name of ensanguined Hades can get a wink of sleep with that infernal yaw-ing and naw-ing dinging in one's ears? It's worse, I swear, than two tabby cats on a housetop. You've kept it up long enough. Shut up, now, both of you, or I'll build a head on you as big as Pike's Peak."

Murmurs of approval of this threat came from behind several curtains in the immediate vicinity. For a few minutes there was quiet. But, presently, Fritz's voice was again heard.

"Du, Yustav!"
"Chaw."

"Vot vos it dot feller say about der Bike's Beak?"

"Haw?"
"Vot dot feller der Bike's Beak about say?"

"Ob I know der Bike's Beak about?"
"Yaw."
"Naw."
"N—"

At this instant the curtains of the nervous man's berth flew wide apart and the nervous man sprang out on the floor. He stepped up to Fritz's berth. All the fury of his manner had disappeared and had been replaced by a sort of calm, cool, determined deliberation. There was a glitter, though, in his eyes which was not pleasant to look at.

"See here, Mr. Dutchman," he said very slowly and quietly; "it's a question of either you or I leaving this car. If this thing was kept up much longer there'd be a homicide here; that's what's the matter. Either you'd pitch out of the window or I would. Now, shall I murder you, or will you murder me? Which is it to be?"

After some little argument between Fritz and the nervous man the affair came to an end something in this wise:—

"Yustav, shall we stay hier to be mortered in der gombany's gar?"

"Op vee here stay shall und mortered be?"
"Yaw?"
"Naw."

"Den vee stay op und go schmoke a piper?"
"Op vee stay op und go schmoke a fifer?"
"Yaw?"
"Yaw."

A few minutes later, followed by withering looks from the nervous man, the two Germans were heavily plodding their way toward the smoking car.

For a time there was peace and quietude in the sleeper. The car lamps burned with

a dim and yellow light as the train rushed through the darkness with a gently swaying motion. Scarcely twenty minutes had elapsed from the time of the Germans departure when suddenly a loud, piercing shriek rang through the car. In an instant curtains were dashed aside to make way for sleepy looking heads, all the attachés of the car who were on duty came running forward and the voice of the nervous man was heard raised in angry protest.

"In the name of a thousand furies," he cried, what's the matter now? Has the en-jine burst her boiler, or is it only somebody that's cut one of those infernal Dutchmen's throats. All this car needs is a throttle valve and a stretch of river to turn it into a first class callopie."

In the meantime the initial scream had been repeated several times with added energy and strength. The screams came from berth No. 10, from which could be seen protruding a pair of legs and the coat tails of a stout man. The colored porter seized these coat tails and asked their owner what the matter was. In reply there came a smothered voice, exclaiming:—

"There's a devil in my berth, and she's got me by the ears."

This remark was supplemented by another shrill scream and an equally shrill female voice, which cried:—

"Take him away! take him away! the villain, the scoundrel!"

The porter squeezed his head into the berth and a moment later was heard saying:—

"Perhaps if you stop screaming ma'm, and let go of the gen'lman's ears, he may be able to get his-self out."

"Oh, the rascal! the villain!" cried the shrill female voice, "there."

At this moment there was an exclamation of agony from the owner of the legs, as if his ears had been violently wrrenched, followed by an agitation of the coat tails. The next instant a bald head and a very red face were withdrawn from the berth. Glancing into the vacancy thus made we all perceived an elderly lady, thin and grim looking, and with her hair done up in crimps, sitting half upright in the berth. Beside her lay another female form.

Hastily throwing her shawl over her head and about her scraggy shoulders the old dame just opened on Mr. Baldhead for all she was worth. She called him a "mean, cowardly villain, a shameless old scamp, who insulted unprotected women." She said that he ought to be lynched, and would be "if there were any men that were men around." At last she was calmed down a bit and her story was got out of her. She was occupying the berth with her servant girl. She had been awakened by some one trying to get into the berth. She had at once seized the intruder by the ears and had called for assistance.

"And very effectually you did it, too, madam," remarked the nervous man. "Considering the disturbance that has been made, I don't know but what you're right in that there remark as to there being a call for a case of lynching in this car."

The baldheaded man protested. He told his story. He had engaged a berth which he was to occupy with his nephew. The latter had left him some time before to go to their berth, as he thought. He had just finished reading his book in the parlor car and had come in to go to bed. He thought he recognized this berth as his, and in the semi-darkness, it was impossible to distinguish the figure in the berth from that of his nephew. Just as he had put his head in he had been seized by the ears and the screaming had begun. He really thought that the devil had taken possession of him. Such a vicious and unreasonable old wretch of a woman it had never been his misfortune to come across before. And the old gentleman put his hand feelingly to his outraged ears.

What was the number of the gentleman's berth? No. 14. Oh, yes; that was two berths further up, and the porter took the old gentleman in hand and showed him the way. His nephew was not yet in bed? No; he had been in the car a few minutes before, and had remarked that he would join some gentlemen in a game of cards in the smoker. With an angry glance toward berth No. 10 the old gentleman clambered into bed.

It seemed that the elderly lady had some difficulty in getting to sleep after the excitement. Anyway, in less than half an hour after her encounter with the elderly gentleman she was seen to emerge from her berth and go forward, presumably bent on a visit to the icewater tank. Before starting out she loosely pinned a pocket handkerchief with a violet border to the curtains of her berth, so that she should have no difficulty in recognizing her resting place on her return. Hardly was her back turned when the two Germans, Gustav and Fritz, came blundering back to their beds. In passing No. 10 Fritz clumsily knocked against the handkerchief, brushing it away with his shoulder. It dropped on his arm, and after

being carried a few steps by him fell to the ground. In so doing it attracted Gustav's attention. He pointed to it, and Fritz picked it up and saw the the pin sticking in it.

"Where it belongs?" he asked of Gustav. "Where belongs it?"

"Yaw,"

"Daw," replied Gustav, pointing sleepily to the curtains opposite which it had fallen.

In another instant Fritz had pinned the handkerchief with the violet border to the curtains of No. 14.

Five minutes later the elderly lady reappeared. She stopped in front of where the violet bordered handkerchief hung. She parted the curtains and with a chilly shiver crawled hastily into the berth.

Fully twenty-five minutes must have elapsed after the Germans had sought their respective berths, when from No. 14 there came an unearthly, blood-curdling shriek, followed by angry exclamations in a deep bass. Again the carattachès rushed forward, again affrighted and sleepy heads appeared behind curtains, again was the voice of the nervous man to be heard upraised in flowing and prolonged outburst of profanity. The curtains of No. 14 were torn apart by the porter, and the elderly lady and the bald-headed man were found struggling desperately in each other's arms. With some difficulty they were torn apart and assisted from the berth. The elderly lady was speechless with rage; the baldheaded man was almost equally angry. He managed to get the floor first.

"I think I am in my own berth this time," he cried, "I have not moved from it since I got in. This is a conspiracy, I say. I shall sue this company for loss of character."

"What!" screamed the elderly lady. "This your berth, you old villain? Where is that girl? Where are you, Mary Jane?"

"Here, if you please ma'am," answered the girl, her head protruding from the curtains of No. 10.

"What are you doing in that berth, you hussey?"

"Please, ma'am this is our berth. I have not stirred from it since we went to sleep."

"Sure enough," put in the porter, with a broad grin, "that's your berth, ma'am, and this 'ere berth belongs to this gen'elman."

"My berth—his berth—in the berth with a man—Mary Jane—Oh! Oh! He! oh!—"

And the elderly lady was in hysterics.

"I shall sue this company?" repeated the baldheaded man with austerity.

"Sue this company? is it?" howled the nervous man, with dilating eyeballs. "Well, I should smile if we would'nt. Call this dodgasted den a sleeping car, do they? All that's needed here is a pinch of brimstone and a pitchfork to convert it into a first-class Inferno!"

The lull of silence which followed the nervous man's stormy anger was broken by two voices from the upper berths:—

"Du, Yustav, kann you schleep mit all dot noise?"

"Op I mit all dot noise schleep kann?"

"Yaw?"

"Naw!"

A HIGH TOWER PROJECTED AT PARIS.

The Washington monument may not long enjoy its pre-eminence as the highest structure in the world. An iron tower of the height of 1,000 feet is to be erected in the grounds of the French Exhibition in 1889. An elevator, the safety of which is guaranteed, will communicate with the summit, and visitors to the exhibition will be taken to the top for a small fee. Those who have the courage to make the ascent will enjoy an almost uninterrupted view for nearly 100 miles all round. The tower will also be utilized for astronomical and meteorological observations, for experiments in optic signaling for the investigation of certain problems in experimental physics, and for various other scientific purposes. It will, perhaps, be remembered that a tower of the same elevation was spoken of in connection with the Centennial Exhibition at Philadelphia but the necessary financial backing could not be had for the enterprise and the project was dropped.

WATER POWER FOR CITIES.

In London the plan of distributing water power in pipes for manufacturing purposes, running lathes, elevators, etc., is now in successful operation. The franchise is owned by the General Hydranlic Power Company. The water is taken from the Thames, filtered through sponge filters then forced through the pipes by steam power. There is a pressure of 700 pounds to the inch in the mains. The mains which now measure in the aggregate seven or eight miles, are cast-iron pipes six inches in diameter; they are cast in nine-foot lengths, and are tested to 2,500 pounds per square inch at the works. The joints are turned and bored spigots and sockets, and are madetight with gutta percha rings, the neces-

sary pressure being obtained by 14-inch bolts passing through the lugs on each pipe. As each section is laid, the water is admitted to test the joints; and after that, if they are tight very little more trouble is experienced. Stop valves are inserted every 400 or 500 yards, and by their aid the position of a leak can be located within that distance, after which it is easily found. The financial success of the company is no longer a matter of doubt. Since January 1 of the present year, the amount of water delivered has increased 40 per cent. and would be much greater if all the intended consumers had their machinery in place. The charges for power are based upon a minimum payment of 25s. per quarter for each machine, and a sliding scale for the water, which is measured by meter as it is exhausted. In many cases the cost of lifting by the company's power is as low as a half-penny per ton lifted 50 feet high.

CHICAGO'S GRAIN TRADE.

Notwithstanding many untoward circumstances and a vast deal of discrimination against her, Chicago still maintains her position as the leading grain market of the world. A glance at the following table will show how the grain trade of the Garden City has increased in the last sixteen years:

Year.	Received, bushels.	Year.	Shipped, bushels.
1869.....	63,417,510	1869.....	56,759,515
1870.....	60,432,574	1870.....	54,745,903
1871.....	83,518,202	1871.....	71,800,789
1872.....	88,426,842	1872.....	83,364,224
1873.....	98,935,413	1873.....	91,597,092
1874.....	95,611,713	1874.....	94,020,691
1875.....	81,087,302	1875.....	72,369,194
1876.....	97,735,482	1876.....	87,241,306
1877.....	94,416,399	1877.....	90,706,076
1878.....	134,086,595	1878.....	118,675,269
1879.....	138,154,571	1879.....	125,528,379
1880.....	165,855,370	1880.....	154,377,115
1881.....	145,020,829	1881.....	140,307,597
1882.....	120,146,488	1882.....	114,864,933
1883.....	164,924,732	1883.....	141,720,259
1884.....	160,569,156	1884.....	142,496,933

Of the receipts in 1884, 27,960,340 bushels were wheat; 59,606,449 were corn; 37,553,209 were oats; 3,417,595 were rye, and 8,555,519 bushels were barley.

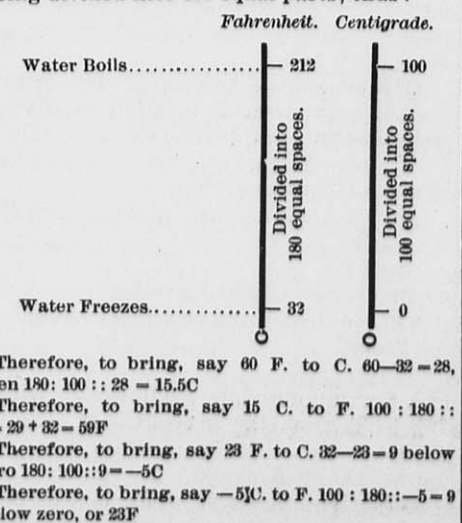
The annexed table gives the name and capacity of each of the regular elevators of Chicago. There are besides a number of private warehouses and elevators attached to manufacturing establishments; but how much capacity they represent cannot be definitely stated:

Name of Elevator.	Capacity, bus.
Central elevator "A".....	1,000,000
Central elevator "B".....	1,500,000
C. B. & Q. elevator "A".....	1,250,000
C. B. & Q. elevator "B".....	850,000
C. B. & Q. elevator "C".....	1,750,000
C. B. & Q. elevator "D".....	2,000,000
C. B. & Q. elevator "E".....	1,000,000
Rock Island elevator "A".....	1,500,000
Rock Island elevator "B".....	1,250,000
Galena elevator.....	750,000
Air Line elevator.....	750,000
Northwestern elevator.....	600,000
Fulton elevator.....	300,000
City elevator.....	1,000,000
Union elevator.....	700,000
Iowa elevator.....	1,500,000
St. Paul elevator.....	1,000,000
Illinois River elevator.....	200,000
National elevator.....	1,000,000
Chicago and St. Louis elevator.....	1,000,000
Neely's elevator.....	600,000
Chicago and Danville elevator.....	350,000
Chicago and Pacific elevator.....	1,000,000
Wabash elevator.....	1,750,000
Western Indiana elevator.....	1,500,000
Seaverns elevator.....	900,000
Hess elevator.....	300,000
Total capacity.....	27,300,000

It is said that a new elevator will be built in this city the coming season by the Chicago and Pacific Elevator Co., with a capacity of a million bushels. This will bring the total storage capacity up to nearly 30,000,000 bushels.—*American Elevator and Grain Trade.*

FAHRENHEIT AND CENTIGRADE THERMOMETERS.

The freezing and boiling points of water under a certain atmospheric pressure are the basis of the calculation in arranging the scale of all thermometers, but in Fahrenheit the freezing point, or zero, is stated as 32, and the boiling as 212, the intervening space being divided into 180 equal degrees, and in Centigrade the freezing point is marked "0," and the boiling point 100, the intervening space being divided into 100 equal parts, thus:



PAPER BARRELS.

A correspondent of the *American Business Guide*, writing from Hartford, Conn., has the following about making paper barrels:

"I noticed in the last issue of the *Guide* an account of paper barrels being manufactured in Hartford, and being on the spot and anxious to see all late and new inventions, took the trouble, or I will say pleasure, to find out all points regarding their manufacture. The company that have at last perfected the machinery for manufacturing the barrels, have worked on it for seven years, and in the face of great difficulties, at last see their efforts crowned with success, as they have the most perfect barrel ever seen. To prove the merit of the barrel they loaded a car with 100 and shipped them to Minneapolis by rail, then it was shipped back by the lakes, and then reshipped by cars back to Minneapolis. On the way back the train was wrecked and the car almost destroyed, yet when it reached Minneapolis, the wreck of a door broken off and the barrels rolled out, not a particle of flour was found on the car floor, notwithstanding the hard usage the car had sustained. The spectators could hardly believe that the hundred barrels contained flour, but upon opening them expressed their admiration at this neat way of shipping flour, as by these barrels none is lost, while by the old way from one to five barrels of flour are lost in each carload, added to which there is also a large cost on the trip for cooerage. This barrel does away with the loss of flour and cooerage and costs no more than wooden barrels. I understand there is now a company being formed in Minneapolis that will at once, at a cost of \$300,000, build a manufactory that will turn out 10,000 paper barrels a day, and no doubt these will, in time, largely do away with wooden barrels. The company here also manufacture a paper barrel for shipping oil in, and a barrel full of oil has been shipped around to San Francisco without losing a drop. The paper barrel is a great success and a great invention, and, no doubt, the patentees will reap their well-earned reward."

ITEMS OF INTEREST.

CUTTING GLASS BY HEAT.—Many directions have been given for cutting glass by the action of heat: by setting on fire a string wet with turpentine, by friction with a cord, by a hot iron, and the like. Of these the hot iron is the simplest and the best. The following directions for the method, and also for making pencils or pastils to be used in a similar way, are from the *Young Scientist*:

The iron rod (a common poker answers very well) should be somewhat pointed, and the line along which the cut is to be made should be marked by chalk, or by pasting a thin strip of paper alongside of it; then make a file mark to commence the cut; apply the hot iron and a crack will start, and this crack will follow the iron wherever we choose to lead it. In this way jars are easily made out of old bottles, and broken vessels of different kinds may be cut up into new forms. Flat glass may also be cut into the most intricate and elegant forms.

Sometimes it is not convenient to use a red-hot iron, and some persons fail in its use. In such cases carbon pencils or pastils may be used. They may be made according to different recipes of which we give three:

1. Dissolve 100 parts of gum arabic in 240 parts of water and mix the solution with a paste prepared by triturating 40 parts of powdered tragacanth with 640 parts of hot water. Then having dissolved 20 parts storax and 20 parts of benzoin into 90 parts of alcohol (0.830) strain the latter solution, and add it to the mixed mucilage. Finally mix the whole intimately with 240 to 280 parts of powdered charcoal, so as to be uniform throughout. The charcoal should previously be passed through a fine sieve. The doughy mass is cut into suitable pieces, which are rolled between two boards dusted over with coal dust, until cylindrical strips about one centimeter in thickness are formed which are allowed to dry slowly between blotting paper. When using them one end is pointed like a lead-pencil, and, after having previously made a scratch in the glass with a file or diamond, the heated and glowing end of the pencil is carried along the line in which the glass is intended to be fractured.
 2. Dissolve 8 to 10 parts of tragacanth in about 100 parts of hot water; add to the mixture under stirring, 30 parts of acetate of lead and 60 parts of finely-sifted beechwood charcoal, and proceed as in the previous formula.
 3. Sticks of soft wood (willow or poplar), of about the thickness of a finger, which must be thoroughly dry, are immersed for about one week in a concentrated solution of acetate of lead, after which they are again dried. When ignited these sticks burn like glazier's charcoal.
- The first formula is that of Berzelius, and yields the best product, as it burns much slower than the others. These pastils main-

tain a more uniform heat than a hot iron which is constantly getting cold.

STEEL CASTINGS are fast coming into use everywhere. The iron foundries of England are complaining loudly of the rage which exists there at the present time for steel castings, and the consequent falling off of their trade. Wherever strength and trustworthiness are needed steel castings are slowly but surely ousting iron ones. The number of steel foundries is rapidly increasing in England, and the consequent competition still weakens the prices. Many iron founders would fain make steel castings also, if they could. But there seems little general prospect of substitution at present, so trying have been the recent years.

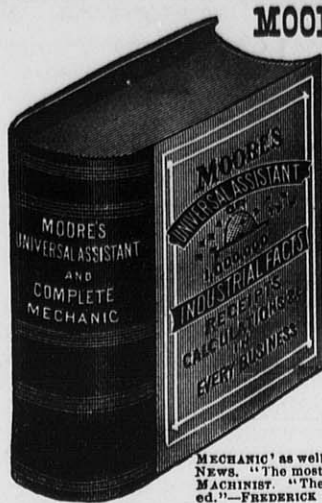
SAFETY PLUGS.—An alloy of 5 parts bismuth, 1 of tin and 1 of lead, will melt at 250°, or 15 pounds pressure. If you diminish the bismuth to 4 parts, it will melt at the boiling of water; if you leave the lead out, and take equal parts of bismuth and tin, it will melt at 280°, or 30 pounds pressure; change this proportion and you may make an alloy melting at 290°, 300°, or 310°, equivalent to about 40, 50 or 60 pounds pressure. When you make an alloy of bismuth, using only tin and lead, you will find that only 3 parts tin and 2 of lead will melt at 320°, or 75 pounds pressure, and 3 of tin and 1 of lead 340°, or 100 pounds pressure.

AMALGAMATING IRON.—First clean the article with hydrochloric acid, and then plunge it into a solution of sulphate of copper, to which a little hydrochloric acid is added; it will then become coppered. Make a solution of bichloride of mercury, mixed also with a few drops of hydrochloric acid, and put the coppered iron in it, when it will become amalgamated.

A RELIABLE filler for porous hard wood is made as follows: Stir boiled oil and corn-starch into a very thick paste, add a little japan, and reduce with turpentine, but add no color for light ash. For dark ash and chestnut use a little raw sienna; for walnut, burnt umber and a slight amount of Venetian red; for bay wood, burnt sienna. In no case use more color than is required to overcome the white appearance of the starch, unless it is wished to stain the wood. The filler is worked with brush and rags in the usual manner. Let it dry 48 hours, or until it is in a condition to rub down with No. 0 sand-paper, without much gumming up, and if an extra fine finish is desired, fill again with the same materials, using less oil, but more of japan and turpentine.

MENDING A BELT.—When a leather belt has been slightly injured by rain or by being wet in any other manner, it should be dried as much as possible, and laps that may be started can be fastened by a little cement, the composition of which, as follows, is furnished by the Page Belting Company: Equal proportions of good glue and Prussian gelatine dissolved in water, and cooked in a tin vessel set into a large one containing water. Do not allow the vessel containing the cement to set quite on the bottom. It should be cooked until it is quite thick and ropy; it can then be worked into the places where the laps are started by means of a knife. The belt should then be hammered until dry, and a few pegs may be used, which can be obtained from any local shoemaker. Cut the pegs off a little from the surface on the reversed side, and hammer them down on a flatiron, anvil, or lapstone.

SUGGESTIONS ABOUT BELTING.—Many serious delays often occur in mills and factories where belting is used, by trusting the supervision of the belts to incompetent persons. It should be the rule of every careful manufacturer to employ none but experienced machinists to manage the belts and to be entirely responsible for them. A competent man will not have a belt of greater length than is necessary; for as is well known long belts sag heavily and cause so hard a drawing on the shaft as to increase the friction on the bearings. The motion, too, is unsteady which will rapidly wear out the machinery and belts. In the selection of pulleys it has been suggested that small ones should be used where consistent, since the belt adheres much better at quick speed than when large pulleys were used and the speed is lessened. It is not best to so place the pulleys that the belt hangs horizontally, but when it is necessary to do so, the belt must be kept tightened, or a constant slipping will prevent the pulleys from doing the work. Where endless belts are not used the motion should run with the lap. It is economical to place the grain side next to the pulley, as the belt is better protected and less liable to crack, besides furnishing a smoother surface to the pulley and being less liable to slip. An experienced machinist says that he always uses castor oil to make the belt hold. It excludes the air from between the belt and the pulley better than animal oils, and although it is more expensive, he has found that it preserves the belt longer than any other oil and keeps the leather more pliable.

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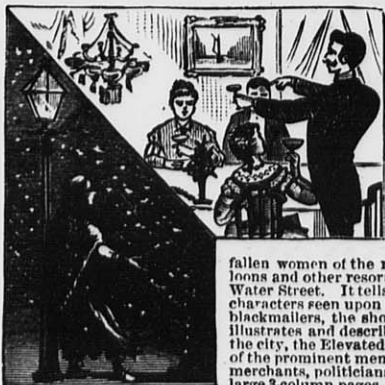
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14.—Insolvent, Assignment, and Homestead Laws of the different States of the Union.

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16.—Debts, Revenues, Expenditures, Imports and Exports of the various Nations of the World.

17.—The Armies of each Nation of the World, their numbers and Annual Cost.

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19.—Value, in United States money, of 83 Foreign Gold and Silver Coins in Circulation.

20.—Tables for reckoning interest at 4, 5, 6, 7, 8 and 10 per cent, from one day to one year, from \$1 to \$1,000.

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MARTYRS TO DUTY.

The appended narrative forms one more chapter in the record of brave men who did their duty regardless of self, and doing it, died that others might live. The account is not fiction, but a record of facts from a correspondent of the *New York Times*.

Were I in want of a hero I could take one ready made from a story told me by our captain, himself as brave a man as ever walked a deck; the simple pathos of it is worthy of Marryatt. On the deadly Senegambian coast of Western Africa an English steamer is gliding into the mouth of one of those rivers in which the fever spirit makes his home. It is the height of the rainy season, and every man knows that a charge like Balaklava would be a light risk compared with that which he is about to run. Not a man is allowed to expose himself to the deadly dew, or to come on deck without having tasted food, and when the returning vessel leaves behind her the fever mists, and glides out of the river to meet the fresh breezes and bright waters of the sea, the captain breathes freely, thinking that the bitterness of death is past.

The next day one of the seamen suddenly turns sick, and after vainly trying to go on with his work is sent below to his hammock. On the following morning two more men sickened, then three, four, five, six. It has come at last, just when all seemed safe. Within four days every man of the crew lies helpless below, and the double burden of tending the disabled men and working the ship falls upon the captain and officers.

The only hope now is to run northward into the first port that offers. But who will maintain the fires and who will work the engines? Only one fireman—an American—is still fit for duty, and even he is already feeling ominous symptoms which he well knows how to interpret. But he is not one to care for his own life, when those of all his shipmates are at stake. Without a word he goes down into the engine room, and remains there five days and nights, with only one boy to help him, snatching food and sleep as best he may, and working as few men have worked, although he feels his life ebbing away hour by hour.

"On the fifth night I went down to look after him," said the captain, with a significant tremor in his manly voice, "and he came up staggering and half dazed, and said, 'Cap'n, I guess I'm 'most played out; I don't think I can do any more.'"

"For God's sake," I said to him, "hold out just one more night. We're close to port now, and there's four dead already; if we don't get in to-morrow morning all the rest may go after them."

"Well," says he, "for your sake, Cap'n, I'll try and fight through it somehow."

Next morning, when port was plain in sight, I went down and found him dead on the floor; and when I saw him lying there and remembered how he'd said it was for my sake he did it, I thought my heart would have broken. We never knew anything about him, except that he was an American, and the name of the place he hailed from. But whoever he may have been, he was the bravest man I ever knew."

THE PHILADELPHIA GRAIN TRADE.

There are some keen men in Philadelphia who recognize that Baltimore has gained an immense advantage in the grain trade by judicious business methods, terminal and storage facilities and legitimate railway competition. The chief complaint is against the Pennsylvania Railroad, which, unlike our Baltimore & Ohio, does not give any lasting benefit to Philadelphia merchants, unless compelled to do so. It is claimed by those who are arraigning the selfish policy of the Pennsylvania road that the grain merchants of Philadelphia built up a fine business with much labor and great cost. Its decline dates from the period when the Pennsylvania road entered the city of Baltimore and competed with the Baltimore & Ohio for the trade of this port. It reached its zenith in 1879, with a total of over 31,000,000 bushels; and has declined to a little over 7,000,000 for the past year. It is further claimed that this great falling off is wholly due to the control of the great monopolist road. Business men are urged to seek relief by encouraging competition with that line. The Baltimore and Ohio is capable of doing it, but city councils are keeping it out, and it is suggested that all who are interested should approach councilmen in such a way as to secure their furtherance of all legitimate competition in this direction.—*Baltimore Journal of Commerce*.

LITTLE WILLIE was fond of throwing stones at the passing school boys and then taking refuge behind the hall door. One day he did not get away so easily, and faring pretty badly, he burst into his aunt's presence with tears running down his cheeks, and sobbed out in great wrath: "I just wish I was an angel 'way up high, where the policemen couldn't catch me, with my pockets full of rocks; if I wouldn't give it to them boys!"

SOME BRITISH MILLING MACHINERY.

During the year 1884, a large roller flour mill, known as the "Albert Bridge Roller Flour Mills," was built in London, England, for Messrs. Marriage, Neave & Co., by the firm of Thompson & Williamson, milling engineers, of Wakefield, England. These mills were planned by Mr. W. H. Williamson, of the firm which supplied all of the machinery used. These mills were erected to compete in the London market with the flour from the mills in America and Austria, and no expense has been spared to make them capable of producing flour economically.

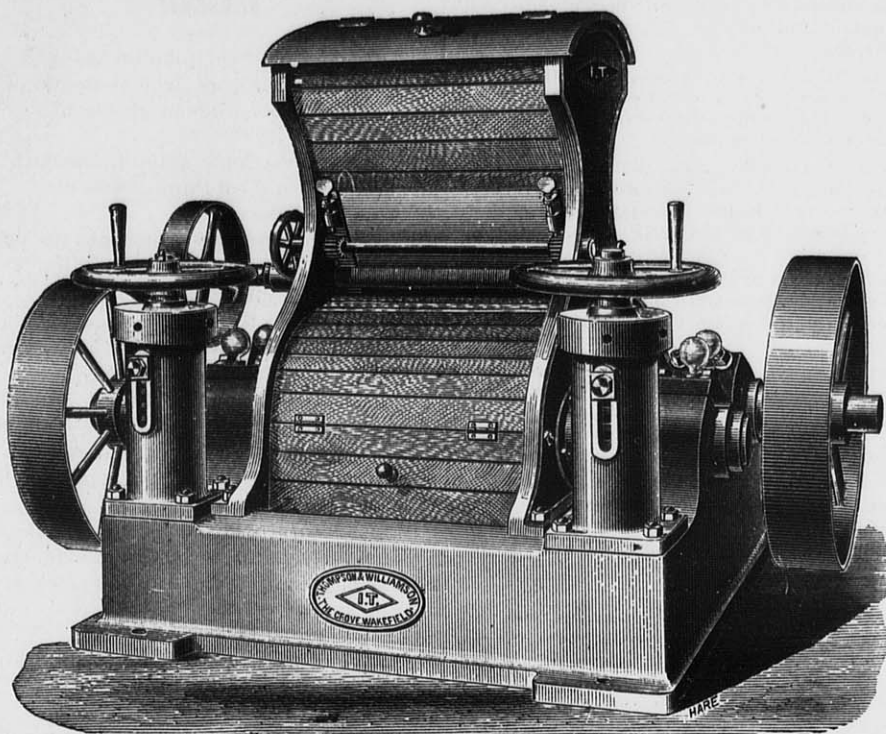


FIG. 1—THOMPSON & WILLIAMSON'S SMOOTH ROLLER MILL.

The mills have the best of receiving and shipping facilities either by rail or water.

The following description which we take from *The Miller*, London, we think will interest our readers:

"The building is divided into three independent portions by fire-proof walls; these are the granary, the wheat-cleaning house, and the mill. One of these sections shows the rows of machines standing next to the wall, and the other the rows next to the center of the rooms, the mill being designed to admit six rows in all, three on each side of the center line. The clearest way to describe the process of gradual reduction devised by Mr. Williamson, will be to follow the wheat through the building, explaining the various operations to which it is subject, from its entrance until it leaves in the form of flour. The grain is lifted from the barge by a hoist, and delivered on the first floor,

being placed as shown in the engraving, one below the other on the various floors. The first is an Eureka zig-zag separator; this removes barley, oats, and other matters foreign to the wheat, which then pass over a pair of powerful magnets. These arrest all the nails, pieces of wire, and other fragments of iron and steel, which, if they remained, might damage the grinding machinery. Mather's decorticator is the next machine, and consists of three grindstones upon the same spindle, each working in a separate trough. The wheat is fed into the first trough, and works its way in succession through all three, being subjected on the way to a powerful scrubbing or grinding action which rubs off the beard and all the loose dirt. It then goes to the Eureka smutter, or if it be really clean wheat it may go to the smutter first, missing the decorticator. Here it suffers a second scrubbing, not so severe as the preceding, and

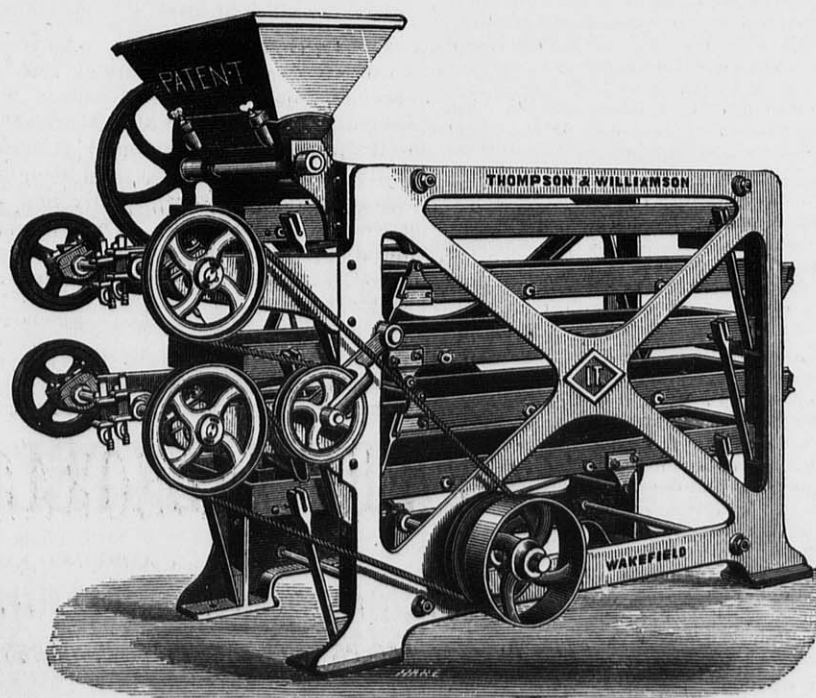


FIG. 2—THOMPSON & WILLIAMSON'S I. T. SIZING MACHINE.

from whence it is sent down the delivery shoot into the basement, to have the free dust and dirt with which it is mixed, removed by two Barnard & Lea separators, which together are capable of dealing with 150 quarters an hour. This process effects a rough separation, and renders the subsequent operations of mixing more healthy for the men, while it also keeps the stored grain in better condition. The wheat is next raised by two elevators to the top of the building, and is delivered into vertical distributing shoots which open into the various wheat garners on the floors below. There are fourteen of these distributing shoots, and each is divided by partitions into four compartments, corresponding to, and opening into, the four floors below. Each compartment is provided with a valve at the top, and thus the man in charge of the elevators can direct the stream of wheat into any one of the 56

then it is delivered to a powerful Victor brush machine, where it is passed in succession between four sets of fixed and revolving brushes arranged on a central spindle, and then the cleaning is complete, except that a small quantity of cockle seed remains to be extracted. If the wheat berry were a round plump body like an egg, the cleansing processes would not need to be so numerous or so searching as these are, but it must be remembered that it has a crease, which forms an excellent receptacle for dirt, along one side, and it has a beard at one end which likewise harbors dust. The first must be brushed out, and the latter scrubbed off, before the grain is fit to be ground, for since one of the tests of flour is whiteness, it follows that every particle of dust that is mixed with it takes off a certain proportion of its value.

"The cleaned wheat is then lifted by an elevator and delivered to one of the bins next the wall of the mill. These bins hold from 40 to 50 tons each, and are of the same capacity as those for the mixed wheat. The grain is drawn from each of these bins by iron sluices in the fireproof wall between the buildings, and is delivered to an elevator which feeds it over a set of magnets to an automatic grain weigher which registers every 50 lbs. entering it. By means of this instrument the miller can tell at what speed the grain is passing through his machinery. The wheat next goes to a grader on the first floor, where it is divided into three qualities by the size of the berries, and is then passed to the cockle cylinders, where the few remaining foreign seeds are removed. The grain is then ready for the grinding or rolling process, the two smaller sizes going to one mill, and the larger to another.

"The roller mills are arranged six in a row. The first two starting from the left hand of the row next the wall, take the two products from the wheat grade, and the remaining four form four successive breaks, there being thus five breaks in all. In addition to this there are a pair of smooth rolls if desired to flatten out the bran. It may be well to explain that the object of these breaks is not to make flour, but to divide the grain into bran and broken wheat kernels, known as semolina and dunst. A certain amount of flour is unavoidably made in the breaking process, but it is kept as small

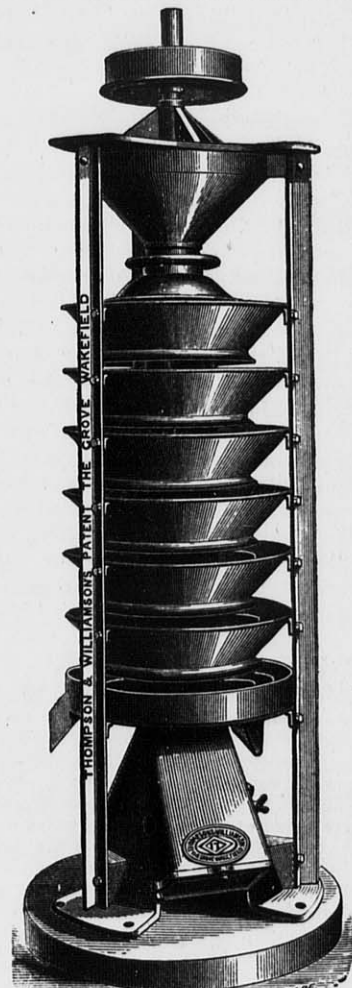


FIG. 3—THOMPSON & WILLIAMSON'S CENTRIFUGAL PURIFIER.

as possible. The semolina is broken into dunst, and the dunst ground into flour in the smooth mills of the second row.

"The patent aspirating rolls for breaking operations are fitted with rolls of the hardest chilled iron, corrugated. Those of the first two breaks lead on with the back edge of the groove, and the subsequent breaks with the sharp edge. Mr. Williamson also prefers that the rolls of the earlier breaks should have straight corrugations, and those of the latter ones should be spirally grooved, and should have a greater differential speed than those which precede them. The first set split the grain along the crease, the next set break each half into two or three pieces, the next carry the division still further, and so on, until at last there is nothing left but the bran. Between the breaks the grain is subjected to two processes. The small quantity of flour which has been made is removed and the broken particles are assorted according to their sizes. Thus the first breakings are elevated to the No. 1 scalping reel, which is a rotating cylinder clothed with plated wire gauze. The flour goes through the meshes, and the semolina and wheat is delivered on to the sizing machine (fig. 2), on the floor below. This has five reciprocating screens, sloping alternately in opposite directions. The crude product is delivered to the first, and the semolina falls through it, and is led into the head of the second screen, where the largest sizes of semolina are separated, and so on throughout the series of five sieves in each machine, the broken wheat falling over the tail of the top sieve, which descends to the second break rolls on the ground floor, being known as the first shredding. The broken wheat carries with it some loose bran, which is removed by aspiration as it falls through the hopper of the aspirator roller mill.

"This process is repeated at every break, and each time the loose flour is removed and the remainder of the product divided, according to size, into five qualities, the largest running down to the next mill. The final delivery of bran, which is cleaned in a bran duster on the upper floor, above the scalpers, is fed into sacks ready for sale. The material which passes through the sieves is semolina of varying degrees of fineness according to the size of the mesh, similar sizes from different machines being mixed together ready for the next process, which is carried out on I T centrifugal purifiers. These (fig. 3.) each consist of a hopper with an adjustable orifice through which the semolina flows in a thin sheet over a convex disc mounted on a vertical rotating shaft. The particles are carried round as they slide over the disc, and fall from it tangentially, the heavier being carried by the greater centrifugal force to a greater distance, and falling into the outer hopper, while the lighter drop into the inner one. As all the particles are of the same size, having been separated by sieves of the same mesh it follows that the centrifugal purifier divides them according to their specific gravities, the heavier being the better quality and being used for the best varieties of flour. The inner disc is in rotation, and again throws out the semolina, the selection being repeated five times in all. At the same time an inward current of air, as indicated in the figure by the arrows, carries all the particles of bran and cerealine into the central trunk, and away to the dust room. From the purifier the different semolinas are led to smooth rolls, with light pressure, to free any adherent bran.

"The resultant flour is dusted out, and the finer dust thus produced, together with the finer varieties obtained in the breaking process, and gathered from the scalping reels, are then freed from flour, and passed on to other sizing machines to be re-sized, and each product being separately purified on centrifugal purifiers as already explained. The heaviest of these is reduced on smooth rolls, and is dressed in centrifugal dressing machines producing the 'patent flour.' The next heaviest is made into 'baker's flour,' while the third quality, with the soft tailings of previous dressings, is again dusted and sized on a separate sizer and special purifiers, and is rolled and dressed to produce flour of lower qualities. The flour is delivered into bins on the second floor, immediately over the Eureka flour packers, by which it is automatically weighed into sacks."

BOOK NOTICES.

HARPER'S MAGAZINE, which gave, some years ago, an interesting paper on Mr. Gladstone and his home at Hawarden, will give in the February issue, a similar article on the leader of the English Conservatives, the Marquis of Salisbury. Hatfield House, his residence, is one of the historic mansions of England; a part of it belongs to the older palace, which was the residence of the Princess Elizabeth before she became Queen of England, and in the grounds is the oak under which she was sitting when the messenger greeted her as sovereign. The paper will have a fine portrait of Salisbury, as well as many pictures of the house, and it is from the pen of Mr. Henry W. Lucy, of the London Daily News, and the "Toby, M. P." of Punch, who was the writer of the Gladstone article.

NEWS.

The Mazeppa Mill, at Red Wing, Minn., has again started up.

W. A. Newton & Co. Millers at Sauk Rapids, Minn., have failed.

BURNED.—Jan. 16th, David Keefer's flour mill, at Covington, Ky.

Priest & Gordon's mill and elevator, at Mt. Pulaski, Ill., burned Jan. 16. Loss \$14,000.

Burned, Jan. 4, Samuel Kaforth's mill at Milford, Pa. Loss \$20,000; insurance \$7,000.

Petaluma, Cal., is to have a \$50,000 flour mill in place of the one recently burned.

BURNED.—J. M. Lanne's mill at Ottumwa, Ia. Loss, \$9,400. Insurance, \$4,300.

Hicks Brown, the president of the Hicks-Brown Milling Co., at Mansfield, O., is dead.

Burned, Jan. 14, the elevator at Big Stone, Dak., with 6,000 bushels of grain. Loss \$14,000.

Chester Darbick, proprietor of a flour mill at Courtland, N. Y., has failed with \$117,000 liabilities.

A recent report places the total milling capacity of Dakota flour mills at 6,480 barrels per day.

Carter & Gooch, Corbin, Kan., are running their new flour mill with a 50 H. P. Westinghouse engine.

BURNED.—The Imperial Mill Mills at Owensville, Ind., burned Jan. 21. Loss, \$8,000. No insurance.

The Bradford Mill Co., of Cincinnati, O., are rebuilding the Huron Mill, a 400-barrel steam mill in Cincinnati.

The Okauchee roller mills, at Okauchee, Wis., owned by E. Schraudenschach & Co., were entirely destroyed by fire Jan. 15.

Wm. Brownlee & Son, Pierre, Dak., are putting a 35 H. P. Westinghouse automatic engine into their new flour mill.

O. F. Barber, at Golden, Col., is building a new flour mill which he will drive with a 75 H. P. Westinghouse automatic engine.

Capt. T. C. Butler, of Palatka, Fla., has purchased for his new saw and shingle mill a Westinghouse automatic engine of 60 H. P.

It is reported that the Lake Superior Roller Mill Co. will have their new 150 barrel mill at Superior, Wis., ready for operation May 15.

The Crookston Roller Mills, of Crookston, Minn., are nearly completed. Their power will be furnished by an 80 H. P. Westinghouse automatic engine.

Kenyon & Newton, Brooklyn, are overhauling their planing mill. They have pulled out their old engines and have substituted a Westinghouse automatic of 75 H. P.

The D. Keefer Milling Co., Covington, Ky., will have a full roller mill completed in time for this year's harvest, to replace their mill recently burned.

Burned, Jan. 12, Wagner's flour mill at Elroy, Wis. Four thousand bushels of wheat contained in the mill were burned. Loss on mill \$5,000; insurance \$2,600. The grain was not insured.

Baer & Mohler, Covington, O., are making some changes in their mill and have placed an order with the Case Manufacturing Co., Columbus, O., for breaks, rolls, purifiers, etc.

Rathman, Fry & Co., Benton, Ohio, are making some changes in their mill and adding two pair rolls with patent automatic feed from the Case Manufacturing Co., Columbus, Ohio.

Lombard, Ayres & Co., are building a stove mill at Mobile Ala., which will be run by a 50 H. P. Westinghouse automatic engine. A smaller engine of the same make will be used to haul the logs into the mill.

Richmond Mfg. Co., Lockport, N. Y., have received the orders for grain cleaning machinery and branders for the Eldred mill at Jackson, Mich., and for the new mill at Niagara Falls being built by the Central Milling Co.

The Case Manufacturing Co., Columbus, Ohio, have secured the contract of Laws, Fuget & Lane, Tower Hill, for a full line of rolls, purifiers, scalpers, centrifugal reels, etc., for a complete gradual reduction mill on the "Case" system.

BURNED.—Jan. 19th. The Ixonia Roller Mills, at Ixonia Center, (Pipersville), Jefferson Co. Wis., owned by Messrs. Piper, Gibbs & Co. Loss \$25,000. Insurance \$6,000. Cause of fire not known. The flames were first discovered coming from the roof of the mill.

The Case Manufacturing Co., Columbus, Ohio, have secured the contract of A. L. Strang & Co., Omaha, Neb., for a complete outfit of breaks, rolls, purifiers, scalping reels, bolting reels, etc., for a complete roller mill on the Case system, to be built at Scotia, Nebraska.

The Cummer Engine Co. have just been awarded the contract for one of their Balantine refrigerating machines for Heine's Brewing Co. of East St. Louis, Ill.; and for a 95 H. P. engine, with outfit complete to be used in the flouring mill of Lee & Herrick, Crookston Minn.

The Mill-owners' Insurance Association of Iowa at its annual meeting, has decided to locate the secretary's office at Des Moines. The treasurer reports the receipts for 1884 at \$35,804; disbursements, \$34,154. The amount of property at risk is \$1,116,600.

We have received from the publisher, John B. Alden, 393 Pearl St., New York—the first number of "Alden's Juvenile Gem," a weekly paper, neatly printed and illustrated, for 75 cents per year; also "The Novelist," published weekly, price \$1.00 per year. The Novelist contains stories by the very best modern authors.

The Paine Lumber Co. of Oshkosh, Wis., have completed their new dry house, which is one of the largest in the country. The arrangement of the fans and power is particularly good. The exhausters, of which there are eight, are overhead, and driven from pulleys on a shaft, in the middle of which is a 20 H. P. Westinghouse engine coupled right and left to it, the engine and shaft making 400 revolutions.

Among the recent shipments of the Cummer Co., are two refrigerating machines to Joseph Henslee, of Newark, N. J.; a 350 H. P. engine to Carlton Foster & Co., Oshkosh, Wis.; a 95 H. P. engine to Edwin Groat, of Henderson, N. Y.; and a 130 H. P. engine to the Dominion Wadding Co., Montreal, Canada. They report a rapid increase in their sales of the Jonathan Mills flour dresser, and the Finch roll.

"The Hazard of Steam Pipes and upon Coverings for Steam pipes," is the title of a special report made to the Manufacturers' Mutual Insurance Co., and is published by Mr. P. A. Montgomery, the secretary of the company, at No. 113 Monroe st., Chicago, Ill. The report is very complete and is interesting and instructive to steam-users. The author is Prof. Charles B. Gibson.

The Milwaukee Dust Collector Mfg. Co. have received the order for a full line of dust collectors for purifiers, rollers and grain cleaners, to be placed in the Pillsbury "B" Mill at Minneapolis, which has just been contracted for with E. P. Allis & Co. Several of the leading mills at Minneapolis are putting in Prinz dust collectors, and they are also now being used at the Pillsbury "A", Washburn "A", and many of the large mills at that place, for collecting the dust from grain cleaners. The company is very busy, and the demand seems to be increasing all the time. They have an exhibit in New Orleans, representing fair samples of their present manufactures. The company is not in the habit of furnishing "trade items," as the list would be too large for regular publication.

The Case Manufacturing Co., Columbus O., have received the following orders the past month: From Corl & Black, Canton, Ohio, for one patent automatic feed for their "Allis" rolls; from N. Belford, Terrill Hill, O., for one Little Giant break machine and four pair rolls with patent automatic feed; from Pease & Ruble, Fairmount, Minn., for one pair rolls with patent automatic feed; from W. M. Potts, Barnes-town, Pa., for two pair rolls with automatic feed, one 2 reel scalping chest; from the Hellman Machine Co., Evansville, Ind., for one "Little Giant" break machine; from Barney & Kilby, Sandusky, O., for one Case improved centrifugal reel, to be shipped to Mitchell & Fry, Oak Harbor, O.; from Albert Fike, Olivesburg, O., for rolls, purifiers, bolting reels, etc.; from Castree, Mallory & Co., Flint, Mich., for two pair rolls with patent automatic feed, to be shipped A. E. Atherton, Grand Blanc, Mich.; from Kerfoot Bros., Des Moines, Iowa, for one patent automatic feed for their "Allis" rolls; from Levi Bishop, North Webster, Ind., for breaks, rolls, scalpers, bolting reels, centrifugals, etc.

In a recent communication from the Case Manufacturing Co., Columbus, Ohio, they inform us that they are this winter putting up an additional wing 50 feet wide by 214 feet long, the especial object of which building is to facilitate their means of casting, grinding and cutting chilled iron. Adding, "that we have had a long experience in casting and

handling chilled iron so that we are able to produce economically anything that anyone can in that line. In the new building, the foundry proper is 50x80 feet. The next section will contain the grinders with special preparations made in the foundation for them. In one end will be a new 100 horse-power automatic cut-off engine of the latest and most improved pattern, which has already been contracted for. Steam will be furnished by two 55 inch boilers; meanwhile the power will be kept in motion as at present." The writer says: "We are induced to make this investment because of the encouraging outlook for business and to enable us to utilize our knowledge which is the result of costly experience of casting and handling chilled iron, of which we mean to make a specialty."

NONSENSE.

"I played a good joke on my wife last night," said Tweezers, who is not kept out of jail on account of his brightness.

"What was it?"

"I had our coachman stand in the dark hall and kiss her, so she'd think it was me."

"What did she do?"

"Nothing. She only came into the parlor where I was sitting, and said: 'Why, Tweezers, I didn't know you had got home.'"

INQUISITIVE.—Jinks tells a good story of a man on a Mississippi steamer who was questioned by a Yankee. The gentleman, to humor the fellow, replied to all the questions straight-forwardly until the inquisitor was fairly puzzled for an interrogatory. At last he inquired: "Look here, squire, where were you born?"

"I was born," said the victim, "in Boston, Tremont street, No. 44, left hand side, on the 1st day of August, 1820; at five o'clock in the afternoon; physician, Dr. Warren; nurse, Sally Benjamin."

Yankee was answered completely. For a moment he was struck. Soon, however, his face brightened, and he quickly said,—

"Yeas; wall, I calculate you don't recollect whether it was a frame or a brick house, do ye?"

PETER FIXED 'EM.—Yes, they were staying at a "winter resort," and it was rather disagreeable to have everybody so painfully aware of the fact that it was their wedding tour. So he made a desperate sort of an appeal to their confidential waiter. And Peter took it and smiled confidentially and discreetly, and said he understood and that he'd see to it, yes, sir. And the next day at dinner the people in the hotel behaved in the strangest manner—it was positively insulting, you know, and she had never been looked at in such a way in all her life before. And so, when they were leaving the hotel, he said to Peter privately: "Peter, did you attend to that little matter I spoke to you about yesterday?"

"Oh, yessir," said Peter, smiling confidentially; "oh, dear, yessir. I done it, sir; I see to it. I told 'em you wasn't no bridal couple, sir—hadn't never been married, sir. Oh, yessir, it's all right, sir?"

THE FARMER AND HIS DOG.—An anecdote: Years ago a Vermont farmer lost many sheep through the depredations of wolves. He journeyed to Boston and returned with a wolf dog, which cost him many dollars. He started out the next day and soon his dog was following up a scent rapidly and disappeared in the woods. The farmer on horseback followed and met a chopper. "Well, stranger, did yer see e'er a dog and a wolf go by?"

"Yaas."

"Wall, how was it?"

"The dorg was a leetle ahead."

FRESH.—A young gentleman who was pledged to take a young lady to a party remarked to her on the afternoon previous to the event that he was going home to take a sleep, in order to be fresh.

"That's right," she replied, "but do not sleep too long."

"Why?" he asked.

"Because," she answered, "I do not want you to be too fresh."

SLEEP ON.—A traveler retires to his room, leaving word that he is to be called for an early train. In the morning he is aroused from a sweet sleep by the porter's knocking vehemently at the door.

"Who's there?"

"Are you the gentleman that was to be called for the 5:25 train?"

"Yes. All right."

"Then you can go to sleep again, sir; the train's gone."

ANOTHER GAME ALTOGETHER.—"Well," remarked the justice, "what is this young man accused of?"

"I caught him playing poker, sir," replied the policeman.

"Yes," returned the court, "but I have no objections to poker, you know. If that is all the charge against him I shall discharge him. What have you to say for yourself, young man?"

"I was sitting down with some friends of mine, your honor, playing a friendly game of cards."

"Yes."

"We had a jack-pot on the table. It was opened, and I came in on a pair of deuces. The man who opened it stood pat and bet \$10, and I called him."

"Called him on deuces? Twenty-five dollars fine. Call the next."

"Yes," gasped the prisoner; "but I thought you didn't object to poker."

"I don't; but to call a man on deuces isn't poker. Call the next case."—Puck.

MILLING PATENTS.

The following list of patents relating to the milling interests granted by the United States Patent Office during the past month, is specially reported by Franklin H. Hough, Solicitor of American and Foreign Patents, 925 F Street, N. W. Washington, D. C.

Issue of Dec. 23, 1884.—No. 309,744—Bolting-reel; C. N. Smith, Dayton, O. No. 309,716—Flour-bolt; A. Heine, Silver Creek, N. Y. No. 309,810—Grain separator; W. B. Vardell, Charleston, S. C. No. 309,870—Roller-mill; W. S. Bacon, Tiffin, Ohio.

Issue of Dec. 30, 1884.—No. 310,134—Flour-bolt; A. Heine, Silver Creek, N. Y. No. 310,126—Flour-mixing machine; J. Dawson, Wilmington, Del. No. 310,180—Grain-drier; R. F. L. Plonnis, Budelsdorf, Germany. No. 309,957—Mill; B. H. Johnson, Lake Mills, Iowa. No. 309,855—Oat-meal mill; J. C. Holloway and C. A. Hudson, Salinas, Cal. No. 310,127—Roller-mill; J. Dawson, Wilmington, Del.

Issue of January 6, 1885.—No. 320,483—Bolting-reel; J. Warrington, Indianapolis, Ind. No. 310,496—Flour-packer; L. Creveling, Akron, O. No. 310,476—Grain-scourer; A. L. Teeter, Indianapolis, Ind. No. 310,503—Grain-separators, measuring and sacking attachment for; J. Forrest, Grand Forks, Dakota. No. 310,236—Grinding-mill; W. H. Wakefield, Baltimore, Md. No. 310,181—Middlings-purifier; I. M. Case, Columbus, O. No. 310,374—Roller-mill; S. R. Campbell, Buffalo, N. Y. No. 310,430—Roller-mill; N. W. Holt, Buffalo, N. Y.

Issue of January 13, 1885.—No. 310,772—Flour-bolt; J. F. Ayres, Alloway, N. J. No. 310,752—Flour-bolt; J. C. Frazier, Vassar, Mich. No. 310,709—Grain-reducing; A. C. Nagel, R. H. Kaemp and A. W. G. Linenbrugge, Hamburg, Germany. No. 310,734—Grain separator and cleaner; E. Sherman, New Pendington, Ind.

Issue of January 20, 1885.—Grain-elevator; R. W. Milbank, New York, N. Y. No. 310,916—Grinding-mill; S. C. Scofield, Freeport, Ill.

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We respectfully refer to the following well-known firms: S. H. Seamans (Empire Mills), Sec'y of the Millers' National Association; E. Sanderson & Co. (Phoenix Mills), Milwaukee, Wis.; Daisy Roller Mills, Milwaukee, Wis.; Nunnemacher & Co. (Star Mills), Milwaukee, Wis.; Roots & Co., (Millers), Cincinnati, O.; C. H. Seybt (Miller), Highland, Ill.; Kosmack & Co. (Flour Brokers), Glasgow, Scotland; J. F. Imbs & Co. (Millers), St. Louis, Mo.; E. Schraudenschach, Okauchee Roller Mills, Wis.; Winona Mill Co., Winona, Wis., and many others.

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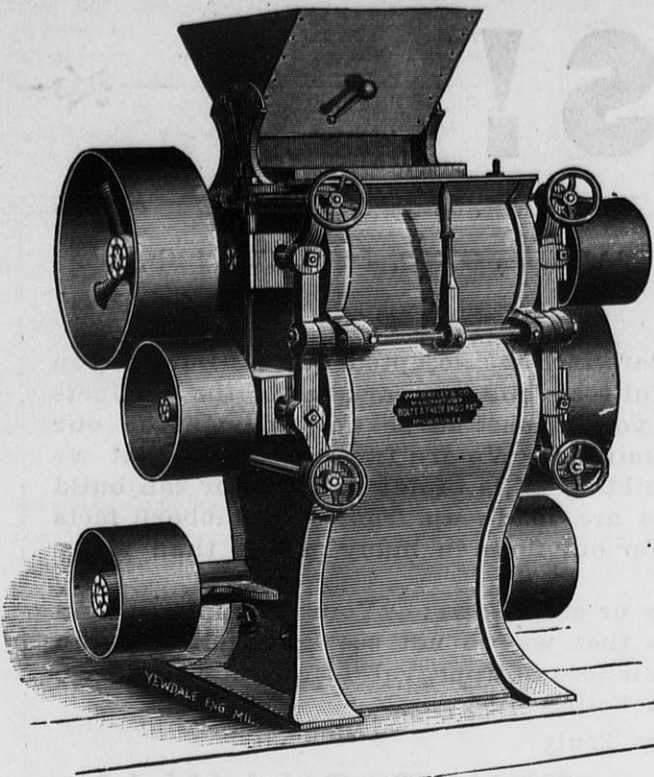
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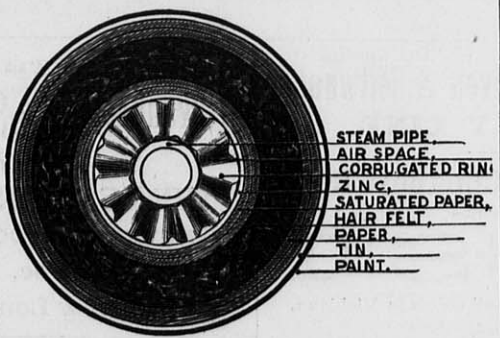
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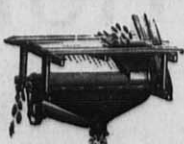
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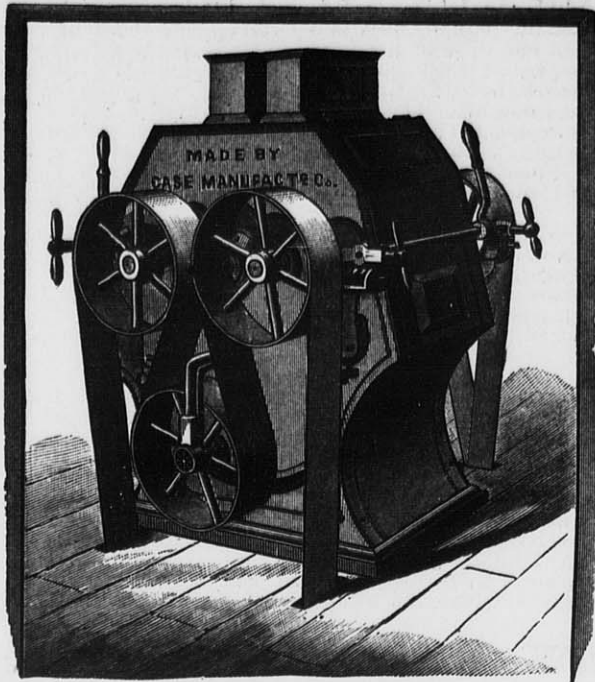
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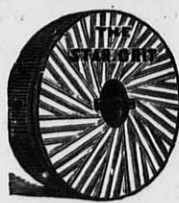
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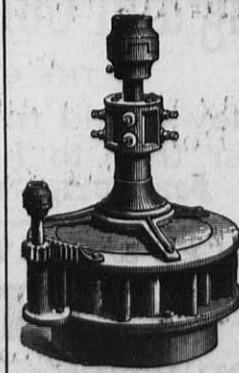
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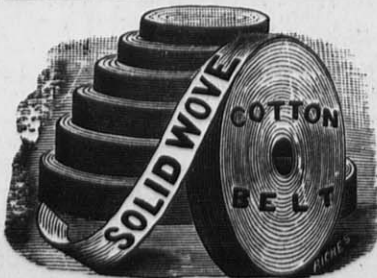
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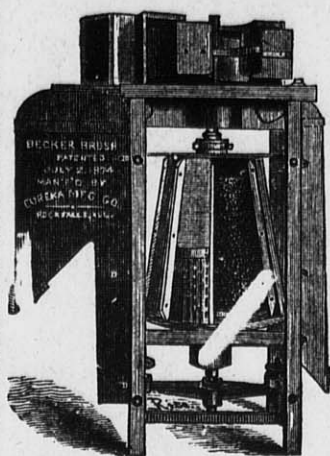
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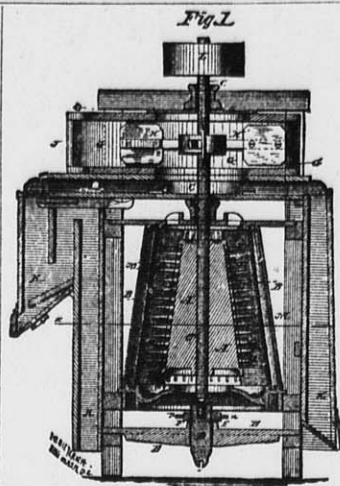
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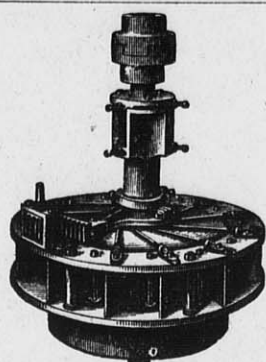
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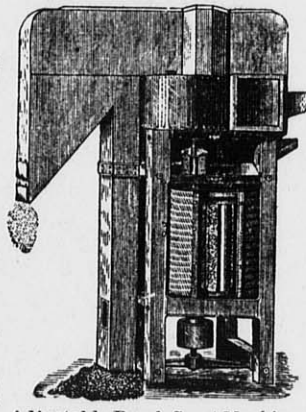
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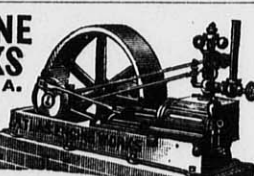
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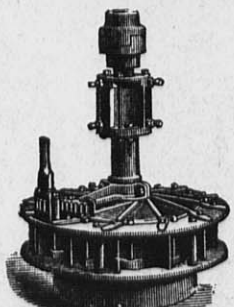
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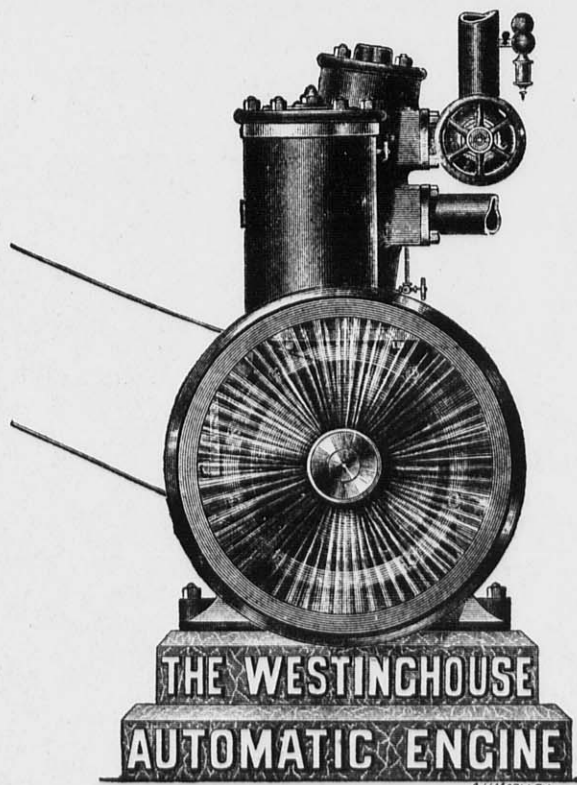
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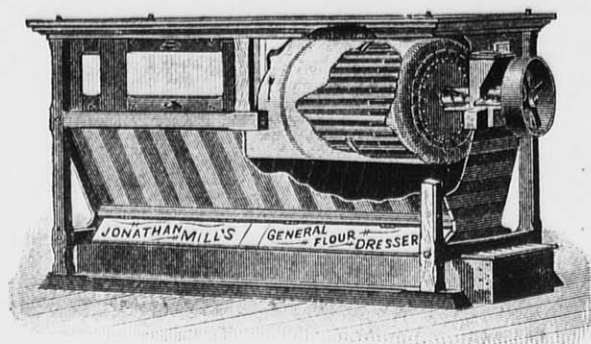
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